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THE BABYLONIAN EXPEDITION

OF

THE UNIVERSITY OF PENNSYLVANIA

SERIES A: CUNEIFORM TEXTS

EDITED BY

H. V. HILPRECHT

VOLUME XX, PART I

BY

H. V. HILPRECHT

"ECKLEY BRINTON COXE, JUNIOR, FUND"

PHILADELPHIA

Published by the Department of Archaeology, University of Pennsylvania

1906

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MATHEMATICAL,

METROLOGICAL AND CHRONOLOGICAL TABLETS

FROM THE

Temple Library of Nippur

BY

H. V. HILPRECHT

Thirty Plates of Autograph Texts and Fifteen Plates of Phototype Illustrations

PHILADELPHIA

Published by the Department of Archaeology, University of Pennsylvania

1906

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To the Memory

of

His Highness

The Duke Friedrich of Anhalt

Whose numerous acts of grace encouraged
the author in his explorations and
cuneiform researches

in

Reverence, Love and Gratitude

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PREFACE.

The cuneiform texts here published form a very small part of a large collection of tablets and fragments once constituting the Temple Library of Nippur. In order not to allow of any doubt as to the real meaning of my words, I emphatically state once more, I do not mean the Temple Archive (on which cf. Vols. XIV, XV and other volumes to follow), or the Temple School (on which cf. Vol. XIX, Part 1, in press, and subsequent parts), or anything else but the **Temple Library of Nippur.** Enough of the crude and unsolicited advice received during the last two years in signed and unsigned American newspaper articles, journals, etc., as to what should constitute an Old-Babylonian temple library, and what I should call the epoch-making discoveries of the University of Pennsylvania's expeditions to Nippur. I must resent it the more, as I happen to be the only Assyriologist who (however hastily in many cases) has examined all the (more than 50,000) cuneiform inscriptions thus far excavated there, and who from its inception to the present day has been connected with this great scientific undertaking. What a Babylonian temple library looks like according to the facts furnished by the spade, and not according to more or less confused theories, I have attempted to set forth in Chapter I of Vol. XIX, Part 1 (in press): "Model Texts and Exercises from the Temple School of Nippur." This chapter was written to form part of the present book; but finding that the new mathematical and chronological tablets here edited required a fuller discussion than originally planned, I was obliged to reserve it for the next volume, in which the Temple School and Temple Archive are treated in their relation to the Temple Library.

It is a very natural desire on the part of scholars to see published as early as possible what is left of the scientific and literary activity at the oldest and most renowned Babylonian sanctuary and seat of learning. At the same time, it is not my nor any one's fault that the various results of our excavations could not have been submitted more rapidly to Assyriologists. All the members of the Babylonian Section of the University of Pennsylvania are taxed to the utmost with constant work on the material to appear in our expedition series. At the best a cuneiform volume is no novel which may be written from day to day. Before the rather pleasant task of "book-making" can begin, the

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numerous fragments preserved in two museums, separated by more than 5000 miles, must be cleaned, minutely examined, catalogued, divided into groups and subdivisions, and as far as possible joined to other pieces of the same tablet (often excavated at different times by different expeditions),[1] that the scholar entrusted with the editing of a volume may receive his material properly prepared. This exceedingly difficult and fatiguing preliminary work has occupied the writer's best time during the past years, when both in Philadelphia and Constantinople he deciphered and catalogued cuneiform material found in the most lamentable condition,[2] in order, first of all, to bring order into a perfect chaos of larger, smaller and smallest fragments of unbaked and mostly half-effaced, crumbling, nitre-covered and otherwise damaged tablets generally written in Old-Babylonian characters.

On the whole, the tablets from the smaller temple library of the Cassite period are much better preserved—being sometimes even baked, cf. No. 20—than those from the time of the first dynasty of Isin (third millennium B.C.). The fragments published as Nos. 21–24, 27, 29, 34–35, 39, are fair representatives of the average condition in which the remains of the older library have come down to us, while Nos. 32, 33, 36, 37, 41–43, are far above the average condition.

Peculiar circumstances arose which made my task even more exasperating. Toward the end of May, 1900, the antiquities excavated by the fourth expedition and packed at Hilla under Haynes' personal supervision, were sealed and delivered to the representatives of the Ottoman Government at that place for shipment to Constantinople. The way around Arabia is long; numerous delays were unavoidable, and frequent transfers of the precious material necessary. The boxes were often exposed to the inclemencies of the weather and roughly handled by inexperienced native workmen. Their Excellencies Hamdy and Halil Bey (to whom again I express my warmest appreciation of their continued interest and loyal support of our work) did everything in their power to secure the early arrival of the antiquities at the Imperial Museum; but more than a year elapsed before they were landed at their place of destination.

In 1901 I went twice to Constantinople, personally unpacking, examining and repacking more than 20,000 inscribed tablets and fragments within four months. A large portion of the Temple Library was presented by His Majesty the Sultan to the writer for his past services in connection with the organization of the Imperial Ottoman Museum. It happened that large masses of antiquities from other excavations arrived in Constantinople that very year, while the magnificent third building of the Sultan's

[1] Cf. *e.g.*, Pls. 17–19 and Pls. XI and XII, partly restored from *C. B. M.* 10,990 (excavated by the second expedition) and *C. B. M.* 19,815 + 19,757 (excavated by the fourth expedition).

[2] Cf. my remarks in *B. E.*, Series D, Vol. I, pp. 513 and 515; *Vortrag*, p. 55 (= "Lecture," p. 19)

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Museum was still in course of construction. It was impossible to provide proper storage for all the boxes in the spacious cellars and vaults at the disposal of the authorities. Wooden sheds had to be erected in the courtyard of the museum, to give temporary shelter to whatsoever could not find a place behind stone walls. The fall and winter rains of 1901 to 1902 were extremely severe, and these sheds proved a very insufficient protection for our own antiquities. Thoroughly wet and partly rotting, the boxes given to the writer arrived in Philadelphia in the summer of 1902, when he was absent in Germany.[1]

Upon my return to Philadelphia, end of September, 1902, the antiquities received were presented to the Board of Trustees of the University of Pennsylvania and a series of public lectures delivered, in which for the first time a summary of the history and scientific results achieved by all the Babylonian expeditions of the University were submitted to the numerous friends and supporters of this great undertaking. At my earliest opportunity I also opened some of the boxes from Constantinople. They were still so wet that their contents of unbaked inscribed clay threatened to be lost to science forever. Energetic measures were necessary to save the broken remains of the Temple Library destroyed by the Elamites and 4000 years later brought to light again by so much personal sacrifice on the part of the Committee and the members of the expedition. Accordingly strict orders were given not to move or touch any of the tablet boxes (stored in a moderately heated large room of the museum), until the writer was satisfied that their contents had become hard enough to be handled with safety.

About two and a half months after my arrival I had to leave Philadelphia again (December 16, 1902) for Constantinople, where I spent over five months in 1903 (February and March; September to December) in cataloguing cuneiform texts and assisting in the arranging of antiquities for the opening of the new museum building. On December 24, 1903, I was back in Philadelphia, examining at once into the condition of the tablets left wet and soft in the previous year. Having convinced myself that the antiquities had been saved by the precaution taken, I commenced to catalogue the large number of tablets remaining from the previous expeditions; for until the present new archaeological museum of the University had been opened (end of 1899, when the writer was *en route* for Babylonia), there was no suitable place for cataloguing and storing the thousands of antiquities already obtained, after the limited space temporarily assigned to the Babylonian section in the Library building had been used. Many of the boxes then in our possession could not be opened at all; others, after a hasty examination of their contents, were repacked and stored with the rest in the cellar of the Library building.

[1] It may suffice to refer my readers to *B. E.*, Series D, Vol. I, p. 318, note 1, and to the preface (pp. VII.) of my "Explorations in Bible Lands."

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About 6000–7000 tablets and fragments have been catalogued by the writer in Philadelphia since January, 1904; several other thousands of cuneiform texts in Constantinople during the same time. My impatient critics must not forget that, with all the well-known energy and enthusiasm displayed by the authorities of the British Museum, Sir Henry Rawlinson and his intelligent and hard-working assistants, nearly fifty years elapsed before Assyriologists could obtain a tolerably accurate idea of the contents of the beautifully inscribed baked fragments of the infinitely better preserved Library of Ashurbânapal. I plead for only ten years for my associates and myself to demonstrate the rich contents of the badly preserved fragments of the Temple Library of Nippur. Apart from the mathematical, metrological and chronological specimens submitted in the following pages and the first part on the Temple School, already in press, four more volumes on hymns and other religious Sumerian texts, syllabaries and lexicographical tablets, and the official correspondence between the Temple officers and the Babylonian kings are already in the course of preparation; to say nothing of four other volumes on dated documents, including the series on the Temple Archive recently successfully opened by Prof. Clay.

The writer is only human and cannot do more than devote his entire life and the strength left to him (after eighteen years of continuous hard work and frequent deprivations of the ordinary comforts of life in behalf of a scientific undertaking) to the resurrection of ancient Nippur. The power of every man has its limits set by nature, even when he is ably supported, as the editor finally is, by half a dozen of enthusiastic pupils and associates in the great work of deciphering and publishing the results of the University of Pennsylvania's Babylonian expeditions.

Many questions, which came up in connection with the study of the texts here submitted, could only be touched upon, if the introduction was to be confined to its proper limits. The writer, therefore, has excluded a discussion of the real meaning of a class of tablets represented by Nos. 20, 24, 37 of his autograph plates and by Plates IV, V, XIII and XIV of the phototype illustrations, for which he refers to the Introduction of Vol. XIX. For the present it may suffice to state that they are text-books prepared by the teachers in the classroom and afterwards deposited in the Temple Library. They afford us a welcome glimpse of one of the ways in which scientific and literary works of Babylonian temple libraries were supplemented and increased. Specimens of this kind are known to me from Nuffar, Jôkha[1] and Abû Habba.[2] On the Obverse of Nos. 20, 24, 37 (cf. Pls. IV and XIII) the priest in charge of the class wrote the left column with his own hand as a model for the pupil, who copied the text in the right

[1] Cf. *B. E.*, Series A, Part 1, Pl. VIII, Nos. 18 and 19.

[2] Cf. Scheil, *Sippar*, pp. 33f., especially the first 8 lines of p. 34.

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column. When the exercise was satisfactory, the teacher removed the pupil's writing by scraping the upper layer of clay off the right column. Frequently, however, before destroying the pupil's exercise, the teacher turned the tablet over and inscribed the Reverse with a similar or an entirely different text, sometimes writing his model twice or three times, after the manner of our own *Schulvorschriften*. On some of the tablets examined the right column has been inscribed and scraped off so frequently that it is considerably thinner than the left column. There are even specimens where the right column has been cut off entirely.[1] In other cases the pupil's exercise has been removed so superficially that, like a Greek palimpsest, the traces left aid in deciphering the contents of the preserved but frequently damaged left column. Through a fortunate accident the pupil's awkward attempts are almost entirely preserved on the fragmentary Obverse of No. 20 (cf. also Pl. IV of the phototype reproductions).

If the teacher was young and inexperienced or careless, his writings were as little free from mistakes as the books of modern "professors," or as many legal documents of ancient Babylonia, where, if anywhere, we should expect a careful wording and writing. I lay stress upon this fact, as it has become rather fashionable in certain quarters to regard everything as a school exercise, due to an unmistakable tendency to measure Babylonian cuneiform works with another standard than the "literary" and "scientific" productions of to-day. As illustrated also by Vol. XIX, there are, of course, a limited number of school exercises, which have come down to us, more by accident than with the purpose of their preservation. At the same time it should be kept in mind that, as a rule, in ancient Babylonia such exercises were destroyed immediately after they had been written. This is amply testified by the very numerous scraps of inscribed clay tablets intentionally pressed out of shape, which we gathered from the floor of the Temple School at Nippur.

In this first publication on the Temple Library of Nippur, it was the intention of the writer to give Assyriologists as objective an insight as possible into the real condition of the material at his disposal and the manner in which the texts here submitted are inscribed and arranged on the originals. He, therefore, has copied even inscriptions, like the Obverse of Nos. 23 (cf. Pls. VIII and VI), 24, 37, the Reverse of No. 38, the texts given as Nos. 44, 45, 46 and Pl. XIII, which with the same right could be classified as syllabaries and lexicographical tablets. For a proper discussion of this kind of cuneiform texts the reader is referred to Vol. XXI, which is in the course of preparation, and to Chapter V of the present volume ("Description of Tablets and Ruins," pp. 61ff.). A few observations may be added to elucidate some of these inscriptions.

[1] For the present cf. the specimens from Jôkha referred to p. x, note 1, above, which were even baked in the kiln, before they were incorporated in the temple library.

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No. 24, Obverse, contains Sumerian and Assyrian synonyms for "food." The left column gives the sign *PAD* with its Sumerian values to the left of it, the right column offers the corresponding Semitic words: *ka-ra-ma-tum* (well known), *ka-sa-pu-u*,[1] *pu-uz-zu-zu*,[2] "something crushed" or "ground," *i.e.*, "flour," "meal" or "pap," *ṣa-al-tum*,[3] "something baked," "broiled," "fried" or "roasted," the last three words being known only from this little Nippur text.

The Obverse of No. 37 is a Sumerian syllabary, containing some values of the signs *KUL* (= *ku-ul* and *nu-mu-un*[4]), *LA* (= *la-a* and *shi-ka*[5]), *SI* (= *si-i* and *shi-i*[6]), *SI-gunû* (= *sû* [cf. S^a 24]-*ú*), *UM* (= *u-um*), *TUB* (= *tu-ub*).

Pl. VI (cf. No. 23, Obverse, and Pl. VIII) contains Sumerian and Assyrian synonyms for "evil doer," "enemy," etc. The left column gives the ideographic writings preceded by the determinative *amêlu*, the right column the corresponding Assyrian words—a fragment of the greatest importance for the Assyrian dictionaries. As an autograph copy of this text will be found in another volume, I confine myself to the right column. Li. 1: *ṣi-e-rum* (= *ṣêrum* = *ṣerrum* = *ṣarrum*, "oppressor," on which cf. the dictionaries). Li. 2: *shâ li-ib-ba-shâ ṣi-ru* [= *ṣirru*, form *fi'l*] *ut-pa-ash-shû*[7] ("he who in his heart contrives enmity"). Li. 3: *na-an-ṣi-rum* (= *naṣṣirum* = *naṣṣarum*, "the lurker" [change of "*a*" into "*e*," resp. "*i*" before "*r*," form *fa''al*] from *naṣâru* II[8]). Li. 4: *ra-aq-qu* = *râqu*, "loafer," "frivolous," "good-for-nothing fellow" (corresponding to *NE-RU* = *erim* in the left column, *i.e.*, the ideogram generally

[1] A form like *nindabû* (on which cf. Jensen in Schrader's *K. B.*, Vol. VI, p. 380). Cf. also "Cuneiform Texts," Vol. XII, Pl. 32, the sixth fragment, lines 4-5 (the mutilated last sign of li. 5 to be restored to "*pu*" = *kusâpu*), and Behrens on *kusâpu* in *Assyrisch-Babylonische Briefe Kultischen Inhalts aus der Sargonidenzeit*, p. 81.

[2] From *pazâzu*, "to crush," "to reduce to small pieces." Cf. Zimmern in *Göttinger Gelehrten Anzeigen*, 1898, p. 823.

[3] From *ṣilâ*, "to bake," "to roast," etc., Hebr. צלה (cf. also Meissner, *Supplement zu den Assyr. Wörterbüchern*, p. 81a). As to its formation cf. *ṣaltu*, "hostility," from *ṣilâ* I, "to be hostile."

[4] For this value cf. already Delitzsch, *Assyrische Lesestücke*, 4th edition, p. 8, No. 47, c.

[5] Cf. "Cuneiform Texts," Vol. XII, Pl. 8, b, li. 1, and Fossey, *Contribution au Dictionnaire Sumérien-Assyrien*, No. 525.

[6] The value "*shi-i*" thus far known only from this Nippur text.

[7] Cf. *Utpashshu* = *utappashshu*, cf. *utnen* = *utannen*, and Hilprecht, *Assyriaca*, pp. 44ff. *Epêshu*, "to meditate," "to plan" (*utpashshu* corresponding to Sumerian *AB-HU-SI-A*, cf. Meissner, *Seltene Assyr. Ideogramme*, p. 61), root חפש, "to dig," "to fathom," "to explore," "to search," "to plan," etc., from which *eppeshu* and *etpêshu*, "wise." Cf. *Tell-el-Amarna, Berlin* 104, 12f.; *Zimrida* ^{âlu}*Lakisi ig-gi-u-shu* (from *egâ* [cf. 103, 7], "*sie versündigen sich an ihn*," or = *ilgiu* = *ilqiu* [cf. יקחו], "*sie haben ihn gefangen genommen*"?) *ardâni ip-shu* [apposition in singular, "seeking" or "planning"] *ana dâki*(?) ["to kill him"].

[8] *Namṣaru* and *naṣṣaru*, "sword" (cf. Zimmern, *Beiträge zur Kenntnis der Babylonischen Religion*, p. 59, li. 198), are *naf'al* forms from the same verb *naṣâru* II, probably identical with *naṣâru* I, "to guard," *i.e.*, either "to protect" (*nam(ṣ)ṣâru*, "the instrument of protection," "sword") or "to lurk," "to lie in wait for" (*nanṣirum*, "the lurker," cf. Job 7, 20: נצר האדם).

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explained by *raggu*,[1] "bad, evil," from which *raqqu* = *râqu* is to be separated). Li. 5: *ai*[2]*-bu-um*, "enemy." Li. 6: *la-si-mu-um*,[3] "runner," "*Landstreicher*," or = *lâ* + *âsimum*, "indecent," "worthless"? Li. 7: *sha-a-nu-â* = Hebr. שׂוֹנֵא, "hater," "enemy." Li. 8: *ga-pir*(*shir*?)[4] *bi-ir-ki*, "strong of knee,"[5] *i.e.*, "pursuer" or "fugitive"(?). Lines 9–11: mutilated (li. 10: ending in . . . *nu-um*). Li. 12: *ra*[*-ash*]*-shu-â*,[6] "the formidable one." Li. 13: *na-'-du*, "the terrible one."[7] Li. 14: *ug-gu-qu* (evidently different from *uggugu*, "enraged," and *uqququ*, "dumb," "mute)."

While preparing this volume, I was repeatedly absent from my library in consequence of unavoidable visits to Constantinople. This compelled me to rely frequently upon the friendly assistance of European colleagues. With warm gratitude I acknowledge the help received from Messrs. Heuzey, Hommel, King, Kugler, Martin, Scheil, Thureau-Dangin and Zimmern, who not only provided me with duplicate copies of important contributions made by them to Assyriology, but at all times most generously placed their time at my disposal for the purpose of examining cuneiform passages temporarily not accessible to me or comparing references required in connection with my researches. To Dr. Budge and Dr. King, of London, I am under special obligation for their liberality in making certain unpublished material of the British Museum accessible to me, and for doing all in their power to render my brief stay in England as pleasant and profitable as possible.

[1] Cf. *ḪUL-GIG*, in li. 1 explained by *ṣêrum* = *ṣerrum*, from *ṣarâru* (צרר), while V *R.* 25, 3a, b it is used for the synonym verb יר, "to hate." *Raggu* (= *râqu* from ריק, as *ṭâbu* "good" from טיב) means "empty," *i.e.*, "idle," "unemployed" (cf. Johns, "Assyrian Doomsday Book," p. 59, and Muss-Arnolt, "A Concise Dictionary of the Assyrian Language," p. 981), or "loafing," "frivolous," "good-for-nothing" (cf. II Samuel 6, 20), as in the passage above. As to *raggu* cf. Jensen in Schrader's *K.B.*, Vol. VI, p. 380.

[2] Through disregarding the historical development of Assyrian grammar, Ranke (*B. E.*, Series D, Vol. III, p. 197, note 2) and others (cf. Delitzsch, *Assyrische Grammatik*, second edition, §§ 20ff.) have recently endeavored to assign to the sign group *a-a* (= *ai*) values which they never have in Assyrian. *dAi*, *Ailatum* (called a "*Spielerei*" by Ranke!), *Airu*, *aibu*, *dainu*, *taira*, etc., are perfectly correct Assyrian forms, historically arisen through syncope of the second *a* or *â* (cf. Delitzsch, *l.c.*, § 45) and vocalizing of "*j*," from the older forms *dAja*, *Ajalatum*, *Ajjaru* (which became איר in Hebrew), *ajâbu*, *dajanu*, *tajâru*, etc. It goes without saying that the earlier and the later forms may occur dialectically side by side, together with a third form arisen by dropping the first consonant and vowel, if ʾ, cf. *ajâbu* and *aibu* alongside of *jâbu*, "enemy"; *ajaumma* and *aiumma*, "anybody," alongside of the shortened *ja-um-ma*, etc.

[3] Cf. Weissbach, *Babyl. Miscellen*, p. 29, li. 19, and Meissner, *Supplem. zu den Assyr. Wortenbüchern*, p. 54.

[4] The sign in question seems to be identical with an unidentified sign frequently occurring in early Babylonian personal names (cf. Ranke, *B. E.*, Series D, Vol. III, pp. 235f., note 9, and Series A, Vol. VI, Part 1, "List of Signs," No. 99), which probably had the meaning *bîru* or *bâru*, "child" (Delitzsch, *Assyrisches Handwörterbuch*, p. 169), and the syllabic values *bîr*, *pir* or (resp. and) *bur*, *pur*.

[5] Cf. V *R.* 65, 34 I: *shâ lâ innuḫû birkâshun*, etc.

[6] Left column: *SHA-TUK*. Cf. *râshû* (*TUK*) = "creditor," and *rushshû*, Delitzsch, *Assyrisches Handwörterbuch*, pp. 627f.

[7] Cf. Jensen in Schrader's *K. B.*, Vol. VI, pp. 8f., li. 38 and p. 315.

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The character of the tablets here treated and the difficulty of the Greek text in which the famous number of Plato appears (cf. Chapter II, pp. 29–34, below) made it necessary for me to appeal to my friends and colleagues in the University of Pennsylvania. For the chemical and microscopical analysis of the clay of certain tablets Vice-Provost Dr. Edgar F. Smith and Prof. Dr. Amos P. Brown deserve my heartiest thanks; while Prof. Dr. E. S. Crawley was always ready to lend a hand in solving mathematical problems, and Prof. Dr. W. A. Lamberton spent an entire evening, not easily forgotten, with the writer expounding the meaning of technical terms in Plato's writings and enabling him to profit otherwise from his profound knowledge of Greek language and literature.

With a view of relieving the Publication Committee of additional expense, a Philadelphia lady, who in other ways has manifested a deep interest in the Babylonian Section of the University of Pennsylvania, has enabled the writer to procure the handsome phototype illustrations found at the end of this volume, which he feels sure will be appreciated by the specialist, and for which he himself is truly grateful. The Editor desires also to express his warm appreciation to Mr. H. C. Mercer, of Doylestown, Pa., for his many successful efforts in baking cuneiform tablets of our Babylonian collections in his kiln and thus helping to preserve them, and to Dr. Talcott Williams, member of the Board of Managers of the University Museum, who for twenty years has taken a cordial interest in our Babylonian researches.

With lasting gratitude I remember the loyal support received for so many years from Mr. Eckley Brinton Coxe, Jr., Vice-President of the Department of Archaeology, unwavering as a man and as a friend, who not only continued generously to provide the means for the publication of the expedition work, but together with Provost Dr. C. C. Harrison, Mr. Samuel F. Houston, President of the University Museum, and Mr. J. Levering Jones—all members of the Publication Committee—and many other members of the University, believed in the writer's science, protecting his honor, and comforting and encouraging him in the darkest hours of his life.

H. V. Hilprecht.

Philadelphia, December, 1906.

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LIST OF ABBREVIATIONS.

B. A. . . . . . *Beiträge zur Assyriologie und (vergleichenden) Semitischen Sprachwissenschaft*, edited by Friedrich Delitzsch and Paul Haupt.

B. E. . . . . . "The Babylonian Expedition of the University of Pennsylvania," edited by H. V. Hilprecht:

Series A: Vol. I, Parts 1 and 2, by H. V. Hilprecht; Vol. VI, Part 1, by H. Ranke; Vol. IX, by H. V. Hilprecht and A. T. Clay; Vols. X, XIV, XV, by A. T. Clay; Vols. XIX, Part 1 (in press), and XX, Part 1, by H. V. Hilprecht.

Series D: Vol. I, by H. V. Hilprecht; Vol. III, by H. Ranke; Vol. IV, by W. J. Hinke (in press).

Banks, "Report". . Report(s) on "The Expedition of the Oriental Exploration Fund (Babylonian Section) of the University of Chicago," by Edgar James Banks.

Bezold, "Catalogue". . . . "Catalogue of the Cuneiform Tablets in the Kouyunjik Collections of the British Museum," 5 vols., by C. Bezold.

Bezold, *Literatur*. . . *Kurzgefasster Ueberblick über die Babylonisch-Assyrische Literatur*, by C. Bezold.

C. B. M. . . . . . Catalogue of the Babylonian Collections in the Archaeological Museum of the University of Pennsylvania—prepared by the Editor.

"Cuneiform Texts". . . . . "Cuneiform Texts from Babylonian Tablets, etc., in the British Museum." Printed by order of the Trustees.

Parts I, III, V, VII, IX, X, XIII, XV, XXI, by L. W. King;
Parts II, IV, VI, VIII, by T. G. Pinches;
Parts XI, XII, XIV, XVI, XVII, XVIII, XIX, XX, by R. Campbell Thompson;
Parts XXII and XXIII, by R. Campbell Thompson and L. W. King.

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I.

ON THE AGE OF BABYLONIAN LITERATURE.

According to Berosus, a Babylonian priest who lived some time between 330 and 250 B.C., the origin of all human knowledge goes back to divine revelation in primeval times. "In the first year there made its appearance from a part of the Erythraean sea which bordered upon Babylonia a living being endowed with reason,[1] who was called Oannes.[2] According to this tradition, confirmed by Apollodorus, the whole body of this creature was like that of a fish, and it had under a fish's head another (or 'a human')[3] head, and feet similar to those of a man but subjoined to the fish's tail, and it also had a human voice; and a representation of him is preserved even to this day. This being, it is said, in the daytime used to converse with men, without however taking any food; he instructed men in the knowledge of writing, of sciences and every kind of art; he taught them how to settle towns, to construct temples, to introduce laws and to apply the principles of geometrical knowledge;[4] he showed them how to sow and how to gather fruit; in short, he instructed men in everything pertaining to the culture of life. From that time [so universal were his instructions] nothing else has been added by way of improvement. But when the sun set, this being Oannes used to plunge again into the sea and abide all night in the deep; for he was amphibious."[5]

[1] The ἀφρενον of the Cod., according to A. v. Gutschmid, is a later Christian interpolation for original ἰμορον.

[2] According to Jensen's very plausible theory (in Schrader's *K. B.*, Vol. VI, p. 302) = *Ummânu, i.e.*, the artisan *par excellence*, evidently one of the epithets of the god Ae (generally read Ea), who frequently bears the title *bêl nîmeqi*, "the lord of wisdom" (= the All-wise), and *bân kôla (e.g., B. E.*, Series A, Vol. I, Pl. 31, 17) or *bân kullati* (IV *R.*[2] 56, 9*b*), "the creator of everything," and therefore including all sciences and arts, as the divine patron of which he was worshipped everywhere in Babylonia (cf. II *R.* 58, No. 5; Jastrow, *Die Religion Babyloniens und Assyriens*, pp. 61ff., 125ff.; and Zimmern in Schrader's *K. A. T.*[3], pp. 358ff., 535).

[3] ἄλλῳ, according to A. v. Gutschmid, corrupted from $\overline{\alpha\nu\omega}$ = ἀνθρωπίνῳ.

[4] Τοῦτο εἰ φησὶ τὸ ζῶον . . . παραδιδόναι τι τοῦ ἀνθρώπου γραμμάτων καὶ μαθημάτων καὶ τι μὲν παντοίαν ἐμπειρίαν, καὶ πόλεων συνοικισμοὺς καὶ ἱερῶν ἱδρύσεις καὶ νόμων εἰσηγήσεις καὶ γεωμετρίας διδάσκειν.

[5] For the Greek text with the Latin version cf. Alfred Schoene, *Eusebi Chronicorum liber prior*, cols. 13 and 14. For English and German translations cf. "Cory's Ancient Fragments," new and enlarged edition by E. Richmond Hodges, London, 1876, p. 57; *George Smith's Chaldäische Genesis*, translated and edited by Hermann and Friedrich Delitzsch, Leipzig, 1876, pp. 39f.; A. Jeremias, *Oannes-Ea*, in Roscher's *Lexicon der Griechischen und Römischen Mythologie*, Vol. III, cols. 577f.; and Zimmern in Schrader's *K. A. T.*[3], p. 535.

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Berosus' statements with regard to the mythology and history of his own people have been so amply confirmed by cuneiform documents,[1] that at the outset we may assume with safety, there was a general Babylonian tradition, according to which the beginnings of agriculture and architecture, religion and legislation, writing and reading, mathematics and astronomy and other sciences, and of the various handicrafts and arts practiced by the inhabitants of lower Mesopotamia were lost in the remotest antiquity. The general correctness of this view of the extraordinary age of Babylonian civilization has for some time been inferred from the remarkable discoveries made in the deepest strata of Nuffar, Tellô, Fâra, Bismâya, and Abû Habba, which at a moderate estimate lead us back into the third and fourth pre-Christian millenniums. In studying those early remains of Babylonian art and literature, certain natural conclusions and comparisons with well-established facts force themselves inevitably upon us. We know for certain that the comparatively high state of civilization revealed by such monuments as, *e.g.*, the pre-Sargonic arches, wells and drains,[2] the stele of victory commonly known as "the stele of vultures," erected by Eannatum,[3] the still older bas-relief representing the solemn meeting of two great chiefs and their retinues of warriors,[4] the remarkable heads of bulls and goats in copper with inlaid eyes from the time of Ur-Ninâ,[5] the silver vase of Entemena[6] and the numerous inscriptions of that early period—even preceded by those archaic tablets on which writing in part is still pictorial[7]—cannot have sprung into

[1] Cf. on this whole question Zimmern's recent observations in Schrader's *K. A. T.*², pp, 490, 530f., 543ff.

[2] As to the ruins of **Nuffar** cf. Peters, "The Nippur Arch," in "The American Journal of Archaeology," Vol. X, pp. 368ff.; Hilprecht, *B. E.*, Series A, Vol. I, Pl. XXVIII, and pp. 25f.; also Series D, Vol. I, pp. 396ff., 542ff.; *Vortrag*, pp. 64ff. (= "Lecture," pp. 54ff.). Concerning similar discoveries made at **Tellô** cf. De Sarzec-Heuzey, *Découvertes*, Pl. 57*bis*, No. 1, and Pl. 57, No. 2; *Une Ville Royale Chaldéenne*, pp. 69ff.; at **Fâra** cf. Hilprecht, *B. E.*, Series D, Vol. I, p. 539, Koldewey in *Mitteilungen*, No. 15, p. 10, Andrae in *Mitteilungen*, No. 17, pp. 8ff., Banks, "Report," pp. 23f.; at **Bismâya** cf. Banks, "Report," pp. 16, 27.

[3] Cf. De Sarzec-Heuzey, *Découvertes*, Pls. 3, 3*bis*, 4, 4*bis*, 4*ter*, and for the literature concerning this monument cf. Heuzey, *Catalogue*, p. 117.

[4] Cf. De Sarzec-Heuzey, *Découvertes*, Pl. 1*bis*, No. 2; 1*ter*, Nos. 1*a* and 1*b*, and also Heuzey, *Catalogue*, pp. 86–9. To the same period belongs the limestone fragment from Nippur published by Hilprecht, *B. E.*, Series D, Vol. I, p. 487.

[5] Cf. De Sarzec-Heuzey, *Découvertes*, Pl. 5*ter*, Nos. 2*a* and 2*b*, and also Heuzey, *Catalogue*, pp. 318–321; Helm and Hilprecht in *Verhandlungen der Berliner anthropologischen Gesellschaft*, February 16, 1901, pp. 162ff.; Hilprecht, *B. E.*, Series D, Vol. I, pp. 539f.

[6] Cf. De Sarzec-Heuzey, *Découvertes*, Pls. 43 and 43*bis*, and as to the literature referring to it cf. Heuzey, *Catalogue*, p. 380.

[7] **A.** The two monuments Blau (now in the British Museum, London, where they are labeled as forgeries—a view which the writer after a recent personal inspection of the originals cannot share), published by Ward in the "Proceedings of the American Oriental Society," October, 1885, p. LVII, and in *J. A. O. S.*, First Series, IV (1888), Pls. IV and V, and republished and transiated by Barton in *J. A. O. S.*, Vol. XXII, pp. 118ff., and collated by the same scholar in *J. A. O. S.*, Vol. XXIV, pp. 388f. **B.** The stone tablet from Jôkha, published by Scheil in *Mémoires de la Délégation en Perse*, Vol. II, pp. 129f. (cf. Vol. VI, p. 61, note 1), and in *Recueil*, Vol. XXII, pp. 149ff., and republished and translated by Barton in *J. A. O. S.*, Vol. XXII, pp. 126ff. **C.** A similar tablet of the E. A. Hoffman Collection in New York,

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existence like a *deus ex machina*, but must have been the result of a gradual development of many years.[1]

On the basis of this and other arguments drawn also from a certain Semitic influence and the evident decay of the Sumerian language, noticeable even in the earliest inscriptions at our disposal, and with due regard to the enormous accumulation of débris below the ancient arch of Nippur, I had, some time ago, reached the general conclusion that the first settlements of this city cannot have been later than c. 7000 or 6000 B.C.[2] My discussion of the new chronological fragment published on Pl. 30 (cf. Chapter IV) will furnish material to show that the Babylonians had facilities to follow their political history far beyond the time of Sargon I and Narâm-Sin (c. 2700 B.C., cf. Chapter IV, below), by means of ancient lists containing the names and reigns of at least as many pre-Ur-Enguric rulers as we know to have lived from Ur-Engur (c. some time between 2500 and 2300 B.C.) to the fall of Babylon (539 B.C.). In other words, at a moderate estimate, the Babylonian scholars of the later period were able to trace the history of their country chronologically as far back as the fourth millennium before our era.[3]

This does not need to surprise us, considering the startling but well-founded results obtained by Hommel and Winckler through their examination of the names of certain Babylonian months. As early as 1891, Hommel had drawn the conclusion from the designation of Tammuz and Elul, as the month of sowing and the month when the grain is in the ear, that these two months must have fallen much earlier than in historical times, when they correspond to our June–July and August–September respectively. He wrote as follows:[4] "*Ja einige derselben* [*scil. der Monatsnamen*] *müssen sogar als Ueberbleibsel einer noch früheren Zeit* [cf. his *Aufsätze und Abhandlungen*, pp. 355 and 459] *bezeichnet werden. Denn wenn der sumerische Name des vierten, bezw. vor 2500 v. Chr. dritten, Monats den Namen "Aussaat," der sechste (bezw. fünfte) aber "Aehre der Göttin Istar," was auf die Ernte und das Dreschen weist, heisst, so passt hier den Landesverhältnissen nach weder der Juli (bezw. Juni) fürs erstere, noch der September bezw. August*

on which cf. Radau, "Early Babylonian History," p. 12, note 1, and p. 321; Barton, "A Sketch of Semitic Origins," p. 213, note 5; "American Journal of Archaeology," Vol. VI, pp. 35f.; *J. A. O. S.*, Vol. XXIII, pp. 21ff. The text of this tablet was published by Ellen Seton Ogden in *J. A. O. S.*, Vol. XXIII, pp. 19f. **D.** An unpublished stone tablet of the Babylonian Museum of the University of Pennsylvania, to appear in Hilprecht, *B. E.*, Series A, Vol. I, Part 3.

[1] Cf. my remarks in *B. E.*, Series D, Vol. I, pp. 251ff.; *Vortrag*, pp. 62ff. (= "Lecture," pp. 54ff.), and Winckler in Schrader's *K. A. T.*[3], p. 9.

[2] Cf. Hilprecht, *B. E.*, Series A, Vol. I, p. 24 (cf. Series D, Vol. I, p. 254), and *Vortrag*, pp. 67f. (= "Lecture," p. 57); also Peters in "The American Journal of Archaeology," Vol. X, pp. 45f.; King, "Babylonian Religion and Mythology," p. 2; and recently Ginzel *Handbuch der Mathem. und Techn. Chronologie*, pp. 107 and 113.

[3] It will be wise to keep these facts in mind when examining into the value of certain ancient dates furnished by Nabonidos, which Winckler continues to regard as entirely without value. Cf. his *A. F.*, *Zweite Reihe* (XIII), p. 369 and Schrader's *K. A. T.*[3], pp. 17f. For my present attitude towards this chronological question, cf. Chapter IV, below

[4] In *Ausland* 1893, Nos. 13 and 14 (literally reproduced in his *Aufsätze und Abhandlungen*, pp. 350–433).

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fürs zweite. Die Sonne muss mindestens noch zu Frühlingsanfang im Zeichen des Krebses oder gar des Löwen gestanden haben, wenn die alten Namen für den Tammuz und Elul irgend welchen Sinn haben sollen; damit sind wir aber im 7. oder gar 8. vorchristlichen Jahrtausend; denn nach Littrow nahm die Mitte des Krebses im Jahre 6770 v. Chr. den Frühlingspunct ein."[1]

Winckler arrived at similar results in his discussion of the significance of IV *R.*[2] 33 (a list of the Babylonian months, with the corresponding gods placed alongside). Some of his more important sentences may be reproduced here literally:[2] "*Die Monatsliste zeigt deutlich, dass die Verteilung der Monate an die einzelnen Götter eine Zeit voraussetzt, wo das Jahr im Sivan begann, d. h. wo die Sonne in den Zwillingen aufging, also zwischen 5700 und 2500.*" . . . "*Die Monate Nisan und Airu sind also erst später vom Ende des Jahres an die Spitze gesetzt worden, als man den Ausgleich mit dem Weiterrücken der Sonne in Stier und Widder vornahm.*" . . . "*Wenn die Aussaat in den Februar [= Tammuz] und die Ernte in Mai–Juni [= Elul] fällt, so führt das auf einen Frühlingsanfang im Zeichen des Krebses oder sogar des Löwen, also vor 7000, denn um 6770 v. Chr. stand die Sonne in der Mitte des Krebses.*" . . . "*Der Monat Sins, der Sivan, wird also hier* [Sargon Cyl. 57–60] *als der Monat des Jahresanfangs, des Frühjahrsaequinoctiums, behandelt, wie es im 7. Jahrtausend der Fall war. Die Mythologie und Weissagekunst rechnet demnach noch mit den damaligen Bedeutungen der Monate und nicht mit denen ihrer Zeit.*"

"*Das Gleiche gilt von der sich sogleich an die obige anschliessenden Bezeichnung des Monats Ab, als arah arad Gibil, der Monat des Herabsteigens des Gibil (Feuergott), denn dieser steigt bekanntlich 50 Tage nach dem Frühjahrsfeste, nach dem Wiedererstehen der Frühjahrssonne (Marduk-Tammuz) herab. Also auch hier entspricht die mythologische Bedeutung des Ab den Verhältnissen des 7. Jahrtausends.*"

Winckler, in adducing new proof that Babylonian mythology rests largely upon astronomy, shows at the same time that the period reflected by many of the calendar myths is the time between the sixth and the fourth pre-Christian millenniums, and that, moreover, this period in which the Semitic Babylonian civilization grew and developed, gradually superseding the Sumerian and everywhere influenced by the latter, was the fundamental period for the entire following civilization generally designated as Babylonian. In later times the ancient learning was regarded as the true one.[3] The art of soothsaying and divination, according to a cuneiform inscription, originated with *Enme-Duranki*,

[1] Cf. also his *Aufsatze und Abhandlungen*, p. 412, where Hommel calls attention to the fact that the *Thierkreis von Dendera* and the so-called *Dekanlisten* commence with Cancer, apparently in view of an ancient tradition.

[2] Cf. Winckler, *A. F.*, *Zweite Reihe* (XIII), pp. 367–372; *Geschichte Israels*, Vol. II, pp. 276ff.; *Die babylonische Kultur in ihren Beziehungen zur unsrigen*, pp. 14f., 29; Schrader's *K. A. T.*[3], pp. 13, 332f.

[3] Cf. Winckler in Schrader's *K. A. T.*[3], p. 13.

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the seventh mythical king of Berosus (Evedoranchos);[1] in fact, science in general went back to antediluvian times, when "the ancient sages" (*abkallê labirâti sha lam abûbi*) lived and committed their sayings to writing.[2]

Our knowledge of Babylonian science and literature, however, has thus far been derived chiefly from the library of Ashurbânapal (668-626 B.C.),[3] which, according to the colophons often found on the tablets, consisted largely of copies of Babylonian originals preserved in the cities of Akkad, Babylon, Cuthah and Nippur.[4] But it was generally maintained by Assyriologists that many of the scientific and literary texts from the Kuyunjuk collections were not for the first time fixed in writing in the seventh century before Christ, but existed in some form or other at a considerably earlier period. This view rested principally on internal evidence and was the result of a critical examination of the writing, language and contents of the tablets. It will be sufficient for my purpose to quote a few examples from a constantly growing number. Compare, *e.g.*, the fragmentary **lists of archaic signs and picture characters** (to many of which the Assyrian scribe added the later cuneiform equivalent) published by Houghton in "Transactions of the Society of Biblical Archaeology," Vol. VI, pp. 454ff., and King in "Cuneiform Texts," Vol. V (cf. also Bezold, "Catalogue"). Or **the hymn of thanksgiving by Nebuchadrezzar I** (towards the end of the twelfth century), known from *K* 2660, *K* 3444, *D.T.* 71,[5] and the **same king's song of lamentation** preserved through *K* 3426.[6] Or **the two fragments of royal letters,** *K* 3045 and *K* 2641, which from their mentioning of earlier Babylonian and Assyrian kings and the use of the characteristic Old-Babylonian letter-formula were shown to be copies of originals written some time in the second pre-Christian millennium.[7] Or **the inscription of the Cassite king (Agum)-Kakrime** (c. 1600 B.C.) known only from a copy of the royal library in Nineve.[8] Or

[1] Cf. Zimmern in Schrader's *K. A. T.*[3], pp. 533ff., and *Beiträge zur Kenntnis der Babylonischen Religion*, pp. 116ff.; Craig, "Religious Texts," pp. 64f.; H *R.* 58, No. 3. On *Daranki* cf. Jensen, *Die Kosmologie der Babylonier*, p. 485; Hilprecht, *B. E.*, Series D, Vol. I, pp. 462ff.; and Hommel, *Grundriss*, p. 351, note 2.

[2] Cf. Jensen, in *Z. A.*, Vol. XI, pp. 90f., and Zimmern in Schrader's *K. A. T.*[3], p. 537f.

[3] Like the temple library of Nippur, this royal library of Nineve was originally stored in two large buildings, where it was discovered and excavated by both Layard (Southwest palace) and Rassam (North palace) in the years 1849-54. Cf. Hilprecht, *B. E.*, Series A, Vol. I, p 121, note 1 (= German edition, p. 115, note 1).

[4] Cf. Bezold, "Catalogue of the Cuneiform Tablets in the Kouyunjik Collection of the British Museum," Vol. V, p. XXIX.

[5] Cf. Winckler, *A. F.*, Vol. I, pp. 534ff.; Hehn in *B. A.*, Vol. V, pp. 326ff.; Zimmern, *Babylonische Hymnen und Gebete*, p. 7.

[6] Cf. King, "Cuneiform Texts," Part XIII, Pl. 48; Winckler. *A. F.*, Vol. I, pp. 542ff.

[7] Cf. Winckler, *Untersuchungen zur Altorientalischen Geschichte*, pp. 24, note 1, 133f.; King, "Letters and Inscriptions of Hammurabi," p. XXIII, note 2.

[8] As to the earlier literature referring to this document, cf. Bezold, *Literatur*, p. 57. See also Jensen in Schrader's *K. B*, Vol. III, pp. 134ff.; Winckler, *Geschichte Babyloniens und Assyriens*, pp. 79ff.; *A. F.*, Vol. I, pp. 517ff.

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the collections of laws written on *K* 4223, *Rm.* 277, and other tablets,[1] and the numerous fragments of **the grammatico-legal series** called *ana ittishu*, which on account of certain peculiar spellings and the occurrence of words, phrases, measures, etc., characteristic of the Old-Babylonian contracts, points to the third millennium before Christ as the probable time of its compilation.[2] Or, **the legend of Sargon of Agade** (*K* 3401 + *Sm.* 2118, *K* 4470),[3] who is said to have lived about 3000 years before Ashurbânapal, or **the tablet of omens** referring to the same Sargon and his son Narâm-Sin and evidently containing historical facts based upon ancient lists of dates.[4] Or **the legends of Ḫammurabi, Libit-Ishtar of Isin, Dungi of Ur, Narâm-Sin and other early kings** published by King in "Cuneiform Texts," Vol. XIII, Pls. 44-47, 49-50.[5] Compare also *K* 8805 + 10,238 + 10,888 and *K* 11,596 with Johns in "American Journal of Semitic Languages," Vol. XVIII, No. 3 ("A new patêsi of Ashur"), and Bezold's remarks in *Z. A.*, Vol. XVI, p. 417f.

In quite a number of cases the internal evidence could be supported by subsequent discoveries and excavations. Thus, *e.g.*, **the legend of Adapa,** known from *K* 8214 and a few other fragments,[6] was shown to have found its way even into Egypt as early as *c.* 1400 B.C., through *Berlin, V.A., Th.* 348, edited by Winckler and Abel, *Thontafelfund von El-Amarna*, p. 166, a and b. **The legend of Etana** (cf. especially *K* 2606 and *K* 8563) was committed to writing (in part even literally identical with the later version) at least at the time of Ḫammurabi (cf. the fragment published by Scheil in *Recueil*, Vol. XXIII, No. LV of his *Notes d'épigraphie et d'archéologie assyriennes*).[7] Portions of the **Gilgamesh epics,** for the greater part edited by Haupt in *Das Babylonische Nimrodepos*,[8] were proved by Meissner in *Mitteilungen der Vorderasiatischen Gesellschaft*, 1902, pp. 1ff. (cf. Pinches in *P. S. B. A.*, 1903, Pls. 8 and 9), to have existed in a different version at the time of the first dynasty of Babylon (*Berlin, V.A., Th.* 4105). The legend attached to the name of an ancient **king of Cuthah** (*K* 5418, *K* 5640, *K* 8582) can now be studied from a much earlier fragment (*c.* 2000 B.C.) published by Scheil in *Recueil*,

[1] For further details cf. Bezold, "Catalogue," and Meissner in *B. A.*, Vol. III, pp. 493ff.

[2] Cf. Peiser, *Jurisprudentiæ Babylonicæ quæ supersunt*; Meissner in *Wiener Zeitschrift für die Kunde des Morgenlandes*, Vol. IV, pp. 301ff.; *Z. A.*, Vol. VII, pp. 16ff.; *B. A.*, Vol. III, pp. 493ff.; Delitzsch in *B. A.*, Vol. IV, pp. 78ff.; Winckler in *O. L.*, 1903, cols. 28ff.

[3] Cf. Bezold, *Literatur*, pp. 36f., and King, "Cuneiform Texts," Part XIII, Pls. 42-43.

[4] Cf. Hilprecht, *B. E.*, Series A, Vol. I, pp. 21, especially 24ff.; Thureau-Dangin in *Comptes Rendus de l'Académie des Inscriptions et Belles-Letters, 28 Août*, 1906; Winckler, *A. F.*, Vol. I, pp. 549f.; *Die Euphratlander und das Mittelmeer*, pp. 8ff.

[5] Cf. also King, "Babylonian Religion and Mythology," pp. 198f.

[6] One of them published by Scheil in *Recueil*, Vol. XX, on the plate accompanying his *Note* XXXVIII. Cf. also Jensen in Schrader's *K. B.*, Vol VI, pp. XVIIf., 92ff., and Zimmern in Schrader's *K. A. T.*[3], pp. 520ff.

[7] Cf. Jensen in Schrader's *K. B.*, Vol. VI, pp. 101ff., 581ff., and Zimmern in Schrader's *K. A. T.*[3], pp. 561ff.

[8] Cf. also Jensen in Schrader's *K. B.*, Vol. VI, pp. XVII and 116-273; *Das Gilgamesh Epos*, pp. 1ff.; and Zimmern in Schrader's *K. A. T.*[3], pp. 566ff. (also Hilprecht in *B. E.*, Series A, Vol. I, Pl. 15, No. 26).

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Vol. XX, pp. 65f., *Note* XXXV.[1] **The story of the Deluge,** familiar to us from numerous fragments of the royal library in Nineve, can be traced back to the time of King Ammîzaduga by the aid of a fragment of the second tablet of a composition called *enuma ṣallu awîlum*, also published by Scheil in *Recueil*, Vol. XX, *Note* XXX;[2] while the **story of a creation of men** by the goddess Mami, referred to on *K* 3399 and *K* 3934 (with which cf. *K* 8522, the seventh tablet of the creation, containing the hymn to Marduk), has been recognized by Zimmern on the badly preserved fragment *Bu.* 91-5-9, 269, belonging to the period of Ḫammurabi.[3] In this connection we may also refer to the numerous tablets of forecasts known from Ashurbânapal's collections, remembering that similar texts existed towards the end of the third millennium before Christ. Cf. *e.g.*, King, "Cuneiform Texts," Vol. V, Nos. 22,446 and 22,447, compared with Zimmern, *Religion*, p. 85, and Hunger, *Becherwahrsagung bei den Babyloniern*, pp. 6ff.

We are therefore justified in ascribing the origin of entire branches, not to say the bulk, of Assyrian literature dealing with ancient writing, mythology and history, hymns and incantations,[4] laws, astronomy and astrology, etc. (and for the greater part first known from the library of Ashurbânapal), to at least the period of the first dynasty of Babylon. Cf. on this question, *e.g.*, Zimmern, *Babylonische Hymnen und Gebete in Auswahl*, p. 4 (also p. 28):[5] "*Bei der uns bis jetzt vorliegenden babylonisch-assyrischen Hymnen- und Gebets-literatur kann von einer allmählichen geschichtlichen Entwickelung, die wir bei ihr verfolgen könnten, kaum die Rede sein. Die Hymnen und Gebete an die Götter werden vom dritten Jahrtausend v. Chr. bis zu den letzten Zeiten, da noch babylonische Literatur aufgezeichnet wurde, d. h. bis kurz vor Beginn unserer christlichen Aera, fast unverändert weiter tradiert. So stellen sich z. B. Hymnen und Litaneien an den Mondgott Sîn, an den Gott Tammuz, die wir aus dem zweiten Jahrhundert v. Chr. besitzen, als direkte Duplikate dar nicht etwa nur zu Texten aus der Bibliothek Assurbanipal's (siebentes Jahrhundert v. Chr.), sondern sogar auch zu solchen aus der Zeit Hammurabi's (Ende des dritten Jahrtausends v. Chr.). Nun ist aber doch nicht anzunehmen, dass sich die babylonische Religion innerhalb dieser zwei Jahrtausende nicht stark verändert und weiter entwickelt hätte; vielmehr haben wir anderweitige direkte Zeugnisse, die beweisen, dass solche Weiterentwicklung, wie ja auch selbstverständlich, in der Tat statt gefunden hat. Die uns vorliegenden Hymnen und Gebete gewähren darum im allgemeinen nicht*

[1] Cf. Zimmern in *Z. A.*, Vol. XII, pp. 317ff., and Jensen in Schrader's *K. B.*, Vol. VI, pp. 290ff.

[2] Cf. Jensen in Schrader's *K. B.*, Vol. VI, pp. 230ff., 288ff., and Zimmern in Schrader's *K. A. T.*[3], pp. 513ff.

[3] Published by Pinches in "Cuneiform Texts," Part VI.

[4] Cf. *e.g.*, Pinches, "The Hymns to Tammuz in the Manchester Museum, Owens College," Manchester, 1904 (Reprint from Vol. 48, Part III, of "Memoirs and Proceedings of the Manchester Literary and Philosophical Society," Sessions 1903-1904); also "Guide to the Babyl. and Assyr. Antiquities," Brit. Mus., pp. 151ff.

[5] Cf. also Meissner in *B. A.*, Vol. III, p. 94; Hommel, *Grundriss*, pp. 18f.; King, "Babylonian Religion and Mythology," pp. 4f., 97ff., 124ff.

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sowohl einen Einblick in das Wesen der babylonischen Religion der späteren Zeit, als vielmehr einen solchen in die religiöse Gedankenwelt der **alt***babylonischen Zeit.*"

Winckler, as already indicated above (p. 4), after reviewing the essential features of the entire civilization of the ancient Babylonians as revealed by their religion, astronomy and astrology, their calendar, their system of numbering and measuring and by their other attainments, comes to the result that "*bereits am* **Anfange** *der ältesten geschichtlichen Kenntniss alle diese Dinge in jenes wissenschaftliche System gebracht waren, und von diesem aus auf uns gekommen sind.*[1] Many facts could be gathered, and many inevitable conclusions might be drawn from the earliest inscriptions known to us in support of Winckler's theory, with which the present writer agrees entirely.[2] But in order to overcome old prejudices, it may seem preferable not to rely upon internal evidence exclusively, but to support it by more ancient literary and scientific documents. For we must confess frankly, many gaps are to be filled out, before the evidence is complete.

The discovery of the famous "Code of Hammurabi," rightly styled "one of the most important documents of the entire human history,"[3] proved beyond any doubt that the fragments of legal literature from Ashurbânapal's library above referred to (pp. 5f.) and the laws in use at the time of the Neo-Babylonian empire existed already at the end of the third millennium. And furthermore, a comparison of their contents with the legal and commercial documents of the period of the dynasty of Isin[4] and the second dynasty of Ur preceding it[5] proves conclusively that Ḫammurabi did not invent these laws, but codified only what, for the greater part, had existed a long time before him.[6]

A similar statement can be made with regard to Babylonian chronology and metrology. For early chronological lists compare Chapter IV of this Introduction. The metrological facts gathered by Reisner,[7] Thureau-Dangin[8] and others from dated docu-

[1] Cf. Winckler, *Die babylonische Kultur in ihren Beziehungen zur unsrigen*, p. 23.

[2] Cf. the result of the writer's examination of the lowest strata of Nippur, referred to above, pp. 2f.

[3] Cf. Winckler, *Die Gesetze Hammurabis*, pp. 6f.

[4] My statement concerning the legal expressions in use at the time of the dynasty of Isin rests upon unpublished material from Nippur dated in the reigns of the kings *Ur-Ninib*, *Bûr-Sîn*, *I-ter-KA-sha*, *Amshu-ili-bân*, *Bêl-bâni* and *Dâmiq-ilishu*. Cf. Chapter IV, below.

[5] For the literature on this subject cf. Johns, "Babylonian and Assyrian Laws, Contracts and Letters," pp. 15ff., to which may be added William R. Arnold, "Ancient Babylonian Temple Records in the Columbia University Library," New York, 1896, and the more important recent publications by Thureau-Dangin (*Recueil de Tablettes Chaldéennes*, Paris, 1903, which contains tablets from the earliest period to the rulers of the second dynasty of Ur), Virolleaud (*Comptabilité chaldéenne*, Part I, Poitiers, 1903; *Di-tilla, textes juridiques Chaldéens de la seconde dynastie d'Our*, Poitiers, 1903; *Textes relatifs au culte des divinités de Lagash*, in *Revue Sémitique*, Vol. XI, pp. 76–81); Delaporte (in *Z. A.*, Vol. XVIII pp. 245ff.); and Barton ("The Haverford Library Collection of Cuneiform Tablets," Part I, Philadelphia, Pa., 1905).

[6] Cf. Meissner, *Aus dem altbabylonischen Privatrecht*, p. 4.

[7] In *Sitzungsb. der Kon. Preuss. Ak. der Wiss. zu Berlin*, 1896, pp. 417–426, and *Tempelurkunden aus Telloh*, p. 155.

[8] In *Recherches sur l'Origine de l'Ecriture Cunéiforme*, pp. 81–90.

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ments of the second dynasty of Ur, and even of a considerably older period, reveal the same system of measuring we find in use at the time of Ḫammurabi. The Old-Babylonian scale of weights known from *Berlin V. A. Th.* 1155, and the list of measures of capacity preserved on the Berlin cylinder *V. A. Th.* 2596,[1] would therefore seem to stand in practically the same relation to the earlier commercial, etc., tablets as the Code of Ḫammurabi to the preceding legal documents. It will, however, be shown in the following pages that such metrological tables or classified lists of early Babylonian measures, and also chronological lists, existed already at the time of the kings of the dynasty of Isin and even before.

Thus far we have examined only single scientific and literary products of the second and third millenniums, from which—in addition to other texts not quoted above—Assyriologists felt justified to draw important conclusions as to the existence of certain branches of literature at this early period. Our knowledge of the literary activity and scientific method towards the end of the third millennium before Christ was considerably advanced by King's *The Letters and Inscriptions of Hammurabi*, 3 volumes, London, 1898–1900,[2] and Scheil's *Une Saison de Fouilles à Sippar*, Cairo, 1902, in which for the first time entire collections of ancient tablets other than the ordinary temple records and votive inscriptions were made known to the public. The first mentioned *Letters* claim our interest both as literary compositions and as official documents containing important historical facts, and at the same time illustrating the king's relation to his vassals and provinces and the administration of justice by the monarch and his officers. On the other hand, the numerous literary and scientific texts published by Scheil—such as fragments of epical literature (cf. pp. 6f., above), hymns, incantations, exorcisms, proverbs, astronomical and astrological, mathematical and metrological tablets, plans of fields[3] and other drawings, sign lists and syllabaries, rationally arranged collections of grammatical and lexicographical material, lists of proper names and name elements,[4] analyses of legal documents, letters, etc., demonstrated that practically all the branches of Babylonian literature known from Ashurbânapal's library were cultivated at the time of Ḫammurabi.

My former investigations in connection with the earliest inscribed tablets and artistic remains from Tellô and Nuffar were summed up thus: "Ancient Sumerian art and science have gradually degenerated under the Semitic invaders. It is true in certain epochs of national importance a laudable renaissance took place, and much that is worthy of recog-

[1] Cf. Meissner, *B. A. P.*, Pls. 56–58 (pp. 98ff.); Lehmann in *Z. A.*, Vol. IV, pp. 290ff.; Oppert, *ib.*, pp. 371ff.

[2] Five royal and some thirty private letters of this period were known previously, cf. King, *l.c.*, Vol. I, pp. XXIIff.

[3] By the fragments published on Pls. 65–68 of his *Recueil de Tablettes Chaldéennes* Thureau-Dangin has shown that plans of houses, fields, canals, etc., were already drawn on clay tablets at the time of Sargon I of Agade.

[4] Cf. also the corrections and suggestions offered with regard to pp. 40–44 of Scheil's book by Ranke, *B. E.*, Series D, Vol. III, pp. 38ff.

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nition was accomplished in many departments in the days of the kings of Ur, of a Ḫammurabi, of the PA-SHE [=Isin][1] dynasty, of an Ashurbânapal and a Nebuchadrezzar; but compared with that highly developed civilization on the threshold of the fifth and fourth millenniums, the new shoots are only miserable aftergrowths of a great period of independent creation long past."[2] In order to understand and appreciate this ancient fundamental period more fully than is possible at present, we need an increased number of literary and scientific tablets older than the seventh century, which will enable us to trace the various branches of Assyro-Babylonian literature and the contents of certain representative texts step by step through the centuries even farther back than we can do with the material already published, and which may even help us to determine the place, time and circumstances of their original composition and the changes they naturally must have undergone in the course of millenniums under different political and religious conditions and many other influences. The final result will doubtless prove the correctness of the view of the extraordinary age of the entire Babylonian civilization maintained by Berosus, and in very essential features already corroborated by modern Assyriological research. The texts from the Temple Library of Nippur published in this and other volumes of Series A will, it is hoped, contribute their share towards the solution of the problem by enabling us to trace the different branches of Babylonian literature known from the library of Ashurbânapal (c. 650 B.C.) to the middle of the second and to the middle of the third millennium, and in some cases even beyond it.

In the first chapter devoted to this subject—Chapter II of the present volume—the writer will endeavor to show, how a certain class of tablets correctly designated by Bezold as mathematical in his *Literatur* and "Catalogue," but represented only by a few specimens in the royal library of Nineve, can be studied for the first time methodically with the aid of the important new material made available through the discovery of the Temple Library of Nippur. As far as unearthed and studied, this library consists of two large collections of tablets and fragments, like the library of Ashurbânapal (cf. p. 5, note 3), discovered in two different buildings at two different parts of the mound. The one, excavated in the long ridge to the west of the *Shaff en-Nil*,[3] was written at the time of the Cassite rulers (c. 1350 B.C.), the other, found in the large triangular mound opposite it,[4] dates from the period of the first dynasty of Isin (c. 2200 B.C.). For further details as to the age and contents of the Temple Library cf. Vol. XIX, Chapter I (in press). Specimens from both collections are submitted to Assyriologists in the following pages.

[1] Cf. Jensen in *Z. A.*, Vol. XI, p. 90, and W. J. Hinke, in *B. E.*, Series D, Vol. IV (MS. ready for the press).

[2] Hilprecht, "In the Temple of Bêl at Nippur," p. 60 (= *Vortrag*, p. 71).

[3] Designated as "Mound IX" on the plan of the ruins published in *B. E.*, Series A, Vol. I, Part 1, Pl. XV.

[4] Designated as "Mound V" on the plan referred to in the previous note, and as "Mound IV" in *B. E.*, Series D, Vol. I, p. 305.

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II.

MULTIPLICATION AND DIVISION TABLES.

The mathematical and metrological texts thus far published are not very numerous. Bezold, in his *Literatur* (1886), pp. 225f., enumerated only six inscriptions, three of which are rather lexicographical in character.[1] Since then a few more tablets have been added by Pinches[2] and King[3] from the collections of the British Museum, by Meissner[4] and others[5] from those of the Berlin Museums, and by Scheil from the results of his excavations at Abû Habba. The new texts which we owe to the last mentioned French Assyriologist are ten metrological texts (including variants and duplicates, cf. *Sippar*, pp. 49-54) and three mathematical texts, No. 289 (a multiplication table : 25×1),[6] No. 428,[7] and No. 639 (a table of square roots, known already from IV *R.*[2] 37).[8] Besides there have been published a number of topographical plans,[9] which may be grouped under the general

[1] The inscription quoted by Bezold under No. 6 of his list (*l.c.*, p. 226) is written on a fragmentary ivory parallelopipedon from Nimrûd. According to Lenormant, *Choix de textes cunéiformes inédits ou incomplètement publiés*, No. 86, pp. 224f., it contains "*règles d'un jeu*," or "*une partie des combinaisons d'un jeu à pièces ou à cases noires et blanches, sortes de damier ou de trictac.*" Face A contains, resp. contained, the numbers [830], 820, 810 (text offers 820 again, by mistake), 800, Face B: [780], 770, 760, 750 (Col. I), 740, 730, 720, 710 (Col. II). Face C and Face D are not quite clear to me. I doubt whether the object had anything to do with games.

[2] Cf. IV *R.*[2] 37 (No. 12,136 and *K* 3168, Rev.), with additions from 81-2-1, 72.

[3] "Cuneiform Texts," Part IX, Nos. 85,194 and 85,210.

[4] *B. A. P.*, Pls. 56-58, cf. p. 9, above.

[5] Cf. *Verzeichnis der Vorderasiatischen Altertümer und Gipsabgüsse*, Berlin, 1889, p. 65, *V. A.*, *Th.* 253 (Table of Square Roots from 31 to 60, known from IV *R.*[2] 37).

[6] Cf. Scheil, *Sippar*, p. 132, where it is described in a very general way as "*Liste de a-du "fois" suivi de chiffres.*" I examined, photographed and copied this tablet in Constantinople, June 14, 1905 (cf. pp. 15f.).

[7] Described by Scheil as "*Exercise de calcul*" (*Sippar*, p. 134) or "une addition" (*l.c.*, p. 48, where the cuneiform text is published). Oppert made this little tablet the subject of a special treatise entitled "*Six cent cinquante-trois: Les carrés mystiques chaldéens*" in *Comptes Rendus*, 1902, pp. 157ff.), which also appeared in German under the title "*Sechshundert drei und fünfzig. Eine babylonische magische Quadrattafel*" (in *Z. A.*, Vol. XVII, pp. 60ff.). Cf. also Bezold's *Assyriologische Randbemerkungen* in *Z. A.*, Vol. XVII, pp. 95f.; and my own remarks, p. 25, below.

[8] Regarded by Scheil as an "*Exercise de calcul*" (*Sippar*, pp. 48 and 137). Cf. Oppert in *Comptes Rendus*, 1902, p. 457, and in *Z. A.*, Vol. XVII, pp. 60f. Also my own remarks on p. 24, note, below.

[9] Generally accompanied by numbers. Cf. *e.g.*, the plan of a large building on *V. A. Th.* 413 (*Verzeichnis der Vorderas. Altertümer*, p. 64); Scheil in *Recueil*, Vol. XVII, pp. 33f. (with which comp. Oppert, *Un relèvement de terrain Chaldéen*, in *Comptes Rendus*, September 7, 1896, pp. 388-397), and *Sippar*, Nos. 143 (unpublished), 169 (unpublished), 178, 180, 181.

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class of mathematical tablets, and certain lexicographical fragments, which are important for our knowledge of the Babylonian numbers.[1] In the fifth volume of his *Catalogue*, Bezold quotes only four tablets from the royal library of Nineve as "mathematical calculations," three of which are known to us in part or completely,[2] while the fourth (*K* 9010) consisting of ten lines (Bezold, *l.c.*, p. 978: "Line 1 of reverse contains a sum total") is still unpublished.[3] It may be that some of the c. 30 unpublished tablets of the Kuyunjuk collections, referred to by Bezold in his *Index* under "Geometrical Figures," "Amulets" and "Astrolabes," belong to the class of mathematical tablets; but being described in the catalogue proper as "omens," "forecasts," "incantations," "a letter from the king" (*K* 13,154), "part of a religious text" (*K* 8111), "portions of a spheroid," etc., they are better excluded from our present discussion. An opinion as to the possible meaning of the "geometrical(?) figures" found on a number of these tablets was recently expressed by Bezold himself in *Z. A.*, Vol. XVII, pp. 95f.

With regard to their contents, the real mathematical tablets above referred to do not offer a great variety. Omitting *Br. Mus.*, Nos. 85,194 and 85,210, which present certain difficulties, and *Sippar*, No. 428, which is too fragmentary to be deciphered with any degree of certainty (cf. however p. 25, note, below), we thus far possess only a table of

199, 427 (cf. *Recueil*, Vol. XVII, p. 33), 718; Thureau-Dangin in *Revue d'Assyriologie et d'Archéologie orientale*, Vol. IV, pp. 13–27 (also Oppert, *Un cadastre chaldéen* in *Comptes Rendus*, August 21, 1896, pp. 331, 348, and Eisenlohr, *Ein altbabylonischer Felderplan*, Leipzig, 1896), *Recueil de Tablettes Chaldéennes*, pp. 65–68, 101, 149, 150; Hilprecht, *B. E.*, Series A, Vol. I, Pl. 62, Nos. 144 (cf. Scheil in *Recueil*, Vol. XVI, pp. 36f.) and 145, and *B. E.*, Series D, Vol. I, p. 518; King, "The Letters and Inscriptions of Hammurabi," Vol. II, Pl. 242, No. 7, III, pp. 255ff.; Clay in "Transactions of the Department of Archaeology," University of Pennsylvania, Vol. I, pp. 223ff. Sometimes similar plans of fields are found on the so-called boundary stones *e.g.*, on an unpublished boundary stone from the time of Nebuchadrezzar I (cf. Hinke in *B. E.*, Series D, Vol. IV). Cf. also the Neo-Babylonian maps and plans recently published by Thompson and King in "Cuneiform Texts," Vol. XXII, Pls. 48–50 (cf. Peiser in *Z. A.*, Vol. IV, pp. 361ff.; Hommel, *Grundriss*, pp. 253ff.).

[1] Cf. *e.g.*, Hilprecht, *Assyriaca*, pp. 67–72 (cf. Pl. 28, No. 44 of the present volume, and Scheil in *Recueil*, Vol. XIX, Note XXVII, pp. 61f.), and Pinches in "Proceedings of the Society of Biblical Archaeology," Vol. XXVI, pp. 51–56, and the plate attached to that paper (cf. Zimmern in *Z. D. M. G.*, Vol. LVIII, pp. 199ff., 458ff.); Scheil in *Z. A.* Vol. IX, p. 219 (= *Sippar*, p. 135, No. 485: "*Petit syllabaire des chiffres fractionnaires*"); *Brit. Mus.*, No. 92,693, etc.

[2] *K* 3168 (= IV *R.*² 37); *K* 8527 (described by Bezold, *l.c.*, p. 935, as "Babylonian; not from Kouyunjik(?) Mathematical calculations, similar to those of *K* 3168. . . Cf. also 81 2-4, 72"), and *K* 2069 (four lines of which were published by Bezold, *l.c.*, p. 400. For my interpretation of this text cf. pp. 25ff., below). *K* 8527 was determined by King some six years ago as a multiplication table (15 × 1). Cf. "A Guide to the Babylonian and Assyrian Antiquities," British Museum, 1900, p. 202, No. 15 (Case I), where the text is referred to under its exhibition number, 92,703 (I owe this information to a personal communication from King, as from the description given by Bezold in his "Catalogue" I naturally could not have recognized *K* 8527 in No. 92,703). Cf. also p. 13, note 3, below.

[3] At my request King kindly examined *K* 2069 and *K* 9010 for me. *K* 2069 will be discussed on pp. 25ff. *K* 9010, according to King's copy, is too fragmentary to determine its contents absolutely. I am, however, inclined to regard it as a mere tabular statement concerning certain objects registered and counted; in other words, I do not believe that it is a mathematical tablet, but a business or administrative record somewhat similar to those recently published in large numbers by Clay in *B. E.*, Series A, Vols. XIV and XV.

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squares from 1 to 60, a table of square roots in several copies,[1] a table of cube roots, and two multiplication tables, the one (25×1) from Sippar[2] (No. 289), and the other (45×1) known as *K* 8527, but evidently not Assyrian but Babylonian.[3] Through the discovery of the Temple Library of Nippur our knowledge of the mathematical and metrological texts is about to be increased considerably.[4] More than half of the tablets submitted in the present volume are mathematical,[5] while sixteen texts are metrological. Their number could have been doubled or tripled without difficulty from the material already examined. But for the time being it seemed wiser to exercise a certain restraint, in order to make the title and contents of this volume as comprehensive as possible, without interfering with the general plan and subdivisions of Series A. Besides, some of the mathematical tablets excluded from these pages are so badly preserved or so fragmentary that they had to be reserved for other parts of this volume, in the hope that the unopened boxes may contain fragments belonging to them, or similar texts, which will help us to determine their contents more exactly.

The mathematical texts here published may be classified as multiplication tables, division tables (previously not recognized and generally found in connection with the former on the same tablet), tables of squares, tables of square roots, a geometrical progression (Pl. 15, No. 25; cf. Pl. IX), and the fragment of a class of texts (Pl. 15, No. 25a) which will receive proper attention in Part 2 of this volume. For another class of mathematical texts see, for the present, *Vortrag*, p. 60, *Abb.* 43 (= "Lecture," p. 51, No. 44). The tables of squares and square roots on Pls. 16 and X, though previously known from other sources, have been published as an illustration of the variety of the mathematical texts excavated at Nuffar, and at the same time to enable Assyriologists to control my statements with regard to the contents and age of the tablets in question. Moreover,

[1] At least two (cf. also 81-2-4, 72?) in the British Museum, *K* 3168, Obverse (cf. IV *R.*[1] 40) and *Br. Mus.* No. 12,136, Reverse, Col. II (cf. IV *R.*[2] 37); one in the Royal Museums of Berlin, *V. A. Th.* 253 (cf. *Verzeichnis der Vorderasiatischen Altertümer*, p. 65), and one in the Imperial Ottoman Museum at Constantinople, *Sippar*, 639. Cf. p. 23, note 3.

[2] After reading Peters' statement in *J. A. O. S.*, Vol. XXVI, 1905, p. 155 ("The Nippur Library"): . . . . 'Abû Habba, where Scheil in his excavation later discovered a considerable number of multiplication tablets of the same general character." I wondered whether I had overlooked any publication, from which Peters could have gathered his information. Though familiar with the results of Scheil's excavations in the Imperial Ottoman Museum at Constantinople, I thought it best to address a letter to the French scholar, inquiring whether he had discovered any other mathematical tablets at Abû Habba than the three reported by him in his *Sippar*—only **one** of which is a multiplication table. The immediate answer was: "*Ausserdem kenne ich nichts*" ("I know of nothing else").

[3] Cf. Bezold, "Catalogue," p. 935, under *K* 8527: "Babylonian; not from Kouyunjik(?)." After an examination of the four lines (the first three and the last) of the cuneiform text copied for me by King, I entirely agree with Bezold's view, also shared by King (according to information by letter), that the tablet is Babylonian, not Assyrian. It is, however, considerably older than assumed in "Guide," Brit. Mus., p. 201. Cf. also p. 12, note 2, above.

[4] Cf. my remarks in *B. E.*, Series A, Vol. I, pp. 531f.; *Vortrag*, pp. 59ff. (= "Lecture," pp. 51f.)

[5] Thirty-one tablets, excluding a number of duplicates.

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the tables of squares given on Pls. 16 and X differ somewhat from IV *R.*[2] 37, in so far as *A-DU*(*R.Í*) is not used in the two Nippur texts, and the writing of the number 19 is peculiar on Pl. 16, No. 26. As indicated above, p. 10, and stated in detail in the "Description of Tablets and Ruins" (Chapter V), the mathematical and metrological tablets here published belong to the second (c. 1350 B.C.) and third (c. 2200 B.C.) pre-Christian millenniums; they were taken from two collections of tablets written at the time of the Cassite rulers and the kings of the first[1] dynasty of Isin respectively. The geometrical progression Pl. 15, No. 25, characterized by the peculiar form of its tablet,[2] and the fragment[3] published on Pl. 15, No. 25a belong, however, to an earlier period, not later than the second dynasty of Ur.

All the multiplication tables submitted were excavated by our expeditions at Nippur, except "9 × 1" (cf. Pl. 2, No. 3, and "Table of Contents"), which was purchased (with another mathematical tablet) by Noorian, a member of our first and second campaigns, from Arabs, who informed him that both came from Abû Habba.[4] Arab veracity is too well known among Semitists to require any illustration on my part. We may take it for all that it is worth, but we must surely be permitted to disregard an Arab statement altogether if contrary to all sound reasoning and internal evidence. After a careful examination of the whole question, I had reached the conclusion some time ago that the multiplication table obtained by Noorian for the University Museum **did not come from Abû Habba, but from Nippur,** where evidently it had been stolen from our trenches or secretly been excavated by some Arab(s). For this reason a photograph of this tablet was already used in my German *Vortrag*, p. 60, *Abb.* 45, as an illustration of the contents of the temple library, from which at the time the lecture was delivered and printed I was thousands of miles away. The other mathematical tablet just referred to will appear in Part 2 of the present volume. My reasons for assigning the purchased multiplication table, 9 × 1, to the ruins of Nuffar, as its place of origin, are briefly summed up as follows:

1. Stealing and secret digging was carried on by the Arabs at Nuffar long before our arrival there in 1889, and has been continued ever since. This is proved by the upper part of a large boundary stone in the Royal Museums of Berlin, described as coming "from Nippur" in *Verzeichnis der Vorderasiatischen Altertümer und Gipsabgüsse*,

[1] I designate the dynasty represented by Ishbi-Girra and his successors (cf. Chapter IV, below) as the first, and the members of the *PA-SHE* (=Isin, cf. p. 10, note 1, above) dynasty as the second dynasty of Isin.

[2] The rounded corners and the convex surface of the Obverse (without a knowledge of its inscription scarcely to be distinguished from the Reverse of the tablet) is a peculiar feature of the earliest clay tablets (cf. Thureau-Dangin, *Recueil de Tablettes Chaldéennes*), which, however, occurs occasionally as late as the second dynasty of Ur.

[3] In color and writing this fragment shows the peculiarities of the Nippur and Jôkha tablets dated in the reigns of the kings of the second dynasty of Ur.

[4] Cf. also Peters in *J. A. O. S.*, Vol. XXVI, p. 155.

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1889, p. 66, No. 213;[1] by a door-socket of Engur, for many years in the possession of Hajji Tarfâ, which according to its inscription belonged to the temple of Bêl, but afterwards had been carried away by the Arabs from Bint el-Amîr (cf. Peters, *Nippur*, Vol. II, p. 269); by the ancient beads and other ornaments worn by the 'Afetsh women around Nuffar, which they declare to have taken out of the coffins and burial urns of this mound excavated by them in a very primitive manner; and lastly by our own repeated experience at Nuffar, and by numerous dated and undated Cassite tablets frequently offered for sale in the bazaars of Constantinople. Cf. Peters, *Nippur*, Vol. I, pp. 276ff., Vol. II, p. 52; Hilprecht in *Z. A.*, Vol. IV, pp. 282ff., VII, p. 318; Clay, *B. E.*, Series A, Vol. XIV, p. 2.

2. As this and the following parts of Vol. XX will show, the multiplication tables are a characteristic feature of the Temple Library of Nippur—c. 15 tables being published here (cf. p. 20, below)—while the excavations at Abû Habba thus far have yielded but **one** multiplication table, which, moreover, has very peculiar features of its own.

3. The multiplication table 9×1 has certain features in common with other Nippur multiplication tables of the Cassite period: its color of clay, palaeography and general appearance, its not using *A-DU(R.Í)*, "times" (cf. Nos. 2, 8, 12, 15, 17, 19, also 26), its not being ruled (cf. Nos. 2 and 12), its not being dated (a feature in common with all the multiplication tables of Nippur thus far excavated),[2] its use of the cuneiform sign (for "4"). There cannot be any doubt that the tablet in question belongs to the Cassite period, which is represented by more than 18,000 tablets and fragments from Nippur, while thus far, according to my knowledge, not one clay tablet of the same period has been excavated at Abû Habba. But more than this, the only multiplication table (25×1) discovered at Sippar differs essentially from similar Nippur tables in its use of the ligature for *A-DU(R.Í)*, never occurring on any Nippur tablet but known also from other Sippar tablets (cf. Part 2 of this volume); in its use of the cuneiform sign for "4," found sometimes on the earlier mathematical, metrological, chronological, etc., tablets from Nippur (cf. Nos. 7, 29, 47); and in being dated in the year of a king of the first dynasty of Babylon. For though the cuneiform signs following *arḫu SHU-KUL-A* (= *Dûzu*) *ûmu I^kam MU USH-SA* are not quite certain,[3] the mode of dating according to a "year following that in which" such and such a thing happened, and the ideographic writing of the fourth month with *A* as the last sign, instead of the

[1] This stone therefore was published by the writer with the permission of Prof. Erman in *B. E.*, Series A, Vol. I, Part 2, Pls. 68 and XXV, No. 69 (cf. also pp. 12 and 66 of that volume).

[2] Cf., however, p. 17, note 4, below.

[3] A photographic reproduction of the Sippar multiplication table, 25×1, will be found as an illustration of the results of Scheil's excavations at Abû Habba in Part 2 of the German edition of my "Excavations in Assyria and Babylonia."

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regular *N.1* (exclusively in use at the time of the Cassite period),[1] are sufficient to show that the Sippar tablet was not written during the time of the Cassite rulers, but must belong to an earlier period, probably the time of the Hammurabi dynasty.[2]

4. Upon my request Prof. Amos P. Brown, of the University of Pennsylvania, kindly subjected the clay of a number of tablets from Nippur, Babylon and Sippar, including the multiplication table 9 × 1 and the Nippur tablet 6 × 1 (excavated by Peters in the course of his second campaign), to a microscopical examination and a chemical analysis. Without having any knowledge as to their places of origin, he at once separated these two multiplication tables, as forming a distinct group by themselves, from the rest of the tablets, declaring their clay to be practically identical and apparently taken from the same bed.

All the multiplication tables, including *K* 8527 and *Sippar*, No. 289, are arranged in the following manner: The figures 1 to 20, 30, 40 and 50 are given in their consecutive order, together with the amounts obtained by multiplying each figure by a certain number. According to the use or omission of the ideogram *A-DU(RÁ)* representing our sign of multiplication (× = "times"), we distinguish three different ways in which these tables are written:

I.			II.		III.		
2 × 1 = 2 (cf. Pl. 1, No. 1).			540 × 1 540 (cf. Pl. 7, No. 15).		25 × 1 = 25 (unpublished).[3]		
2 *A-RA*	1	2	1	540	25	1	25
A-RA	2	4	2	1080	25	2	50
A-RA	3	6	3	1620	25	3	75
A-RA	4	8	4	2160	25	4	100
A-RA	5	10	5	2700	25	5	125
A-RA	6	12	6	3240	25	6	150
A-RA	7	14	7	3780	25	7	175
A-RA	8	16	8	4320	25	8	200
A-RA	9	18	9	4860	25	9	225
A-RA	10	20	10	5400	25	10	250
A-RA	11	22	11	5940	25	11	275
A-RA	12	24	12	6480	25	12	300

[1] Cf. the constant writing *SHU-KUL-N.1* on the tablets published by Clay in *B. E.*, Series A, Vols. XIV and XV, also No. 162 of his "List of Signs" (Vol. XIV). Though I catalogued thousands of other tablets of the same period, I never found *SHU-KUL-A*. The writing *SHU-KUL* on P(eiser) 100 is an abbreviation or a scribal error.

[2] For the writing of the names of the months in use at this early period cf. King, "The Letters and Inscriptions of Hammurabi," Vol. III, pp. XXXVff., note 3, and the present volume, No. 46 (dynasty of Isin) and Chapter IV.

[3] Cf. *B. E.*, Series D, Vol. I, p. 532. I have not come across this multiplication table again since I copied it in Constantinople, November, 1901. It is thus far the only one arranged in this manner besides the table of squares published on Pl. 16, No. 26. For a still other way cf. the table of squares IV *R.*[2] 37 (1 *A-RÁ* 1=1; 2 *A-RÁ* 2=4; 3 *A-RÁ* 3=9, etc.).

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I.			II.		III.		
2 × 1 = 2 (cf. Pl. 1, No. 1).			540 × 1 = 540 (cf. Pl. 7, No. 15).		25 × 1 = 25 (unpublished).[1]		
A-RA	13	26	13	7020	25	13	325
A-RA	14	28	14	7560	25	14	350
A-RA	15	30	15	8100	25	15	375
A-RA	16	32	16	8640	25	16	400
A-RA	17	34	17	9180	25	17	425
A-RA	18	36	18	9720	25	18	450
A-RA	19	38	19	10,260	25	19	475
A-RA	20	40	20	10,800	25	20	500
A-RA	30	60	30	16,200	25	30	750
A-RA	40	80	40	21,600	25	40	1000
A-RA	50	100	50	27,000	25	50	1250

On Pl. 3, No. 5, which offers the same contents (18 × 1) as Pl. 2, No. 4,[2] the scribe, evidently through a mistake,[3] omitted "times 50 = 900," writing "times 60 = 1080 (= 18 *soss*)" instead. This is the only case known to me in which the multiplication is carried to 60 (= 1 *soss*). Sometimes, however, one or more additional lines, unfortunately generally mutilated, follow the multiplication table proper. Cf. Nos. 2, 3, 4, 7, 8, 12, 15, 16 (probably also No. 17, Rev., Col. IV). It is not possible to state with certainty what in each case stood there. The closing lines of No. 2 possibly contained a date.[4] In No. 4 the last four signs read: ". . . *DA-ᵈKur-gal*," which (with due consideration of the traces left at the beginning of this line) may be restored to "[ʰ*Iup-shar*⁵] *Ile'i-ᵈKur-gal*," "the

[1] See footnote 3 on previous page.

[2] The two copies have been prepared because the "19" is made differently on both, because the one tablet has "times 50 = 900," the other "times 60 = 1080," and finally because No. 4 has an additional line at the end.

[3] Observe that "60" is expressed by 6 tens instead of one perpendicular wedge.

[4] What is left of li. 24 I read: ". . *-an-Tar-gu*," which either forms part of an unknown scribe's name or is to be read "[*Ka-da-ash-ma*]*-an-Targu*," and regarded as a variant of the Cassite king's name *Kadashman-Turgu*, according to whose reign the tablet possibly was dated. For as the god *Turgu* thus far never has the determinative *ilu* in Babyl. transliterations of Cassite names, it seems preferable to read the corresponding sign phonetically (*an*), connecting it with the preceding mutilated signs. As to the writing *Ka-da-ash-ma-an* instead of the common *Ka-dash-man*, cf. *B. E.*, Series A, Vol. I, Part 1, Nos. 59, 3; 63, 6; 65, 3; 68, 14. The spelling with "*a*" (*Targu*) instead of the common *Turgu* can be easily explained through the influence of the following "*r*," cf. *ilu Kargal* and *Kuri(c)gal* (cf. p. 18, note 1, below), *Murutiash*, *Marutiash* and *Marattash* (cf. a similar influence exercised by "*l*" in *Elálu* and *Ulálu*). Besides cf. the name *Tar-ku-a-bu* (not *Tar(Kud, Ḫash)-ku(ma)-a-bu*, Clay), "Tarku is father" (and perhaps *Ṣilli-ᵈTar-ku*, though the traces point to ᵈ*KUD-DA*, or to ᵈ*KUD-ZU*(?), as the name of the god has been rendered by Clay, *B. E.*, Series A, Vol. XV, pp. 44 and 43), on the one hand, and *Turku* (*K* 2100, Obv. 13, a) on the other. For the identity of *Targu* or *Turgu* with *Tarku* (Ταρκω) or *Turku*, *Tarqu* and *Tarḫu*, cf. Hilprecht, *Assyriaca*, p. 119, and the literature quoted there.

[5] Instead of the ordinary transliteration *dupsharru* or *tupsharru*, I prefer *ṭupsharru*, in view of Hebrew טפסר and Sabean טר. Cf. *DÚB* (*du-ub*) = *tu-up-pu* (*Sc.* 38) and *tu-up-shi-kam* and *tu-up-shi-ka-a-te* (*B. E.*, Series A, Vol. I, Part I, No. 84, Cols. II, 58; III, 5, 22), also Zimmern in Schrader's *K. A. T.*³, p. 400, note 5.

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scribe He'i-Kargal."[1] No. 7, 24 offers *dNidaba*, which possibly was preceded originally by another sign, with which it formed the proper name of the scribe. At the end of other tablets we find a number, the meaning of which is not always clear (cf. No. 3, 24; No. 8, 24; No. 12, 26).[2] In some cases we have a colophon indicating the next lowest multiplication table of the whole series,[3] sometimes preceded by the square of the number multiplied on the tablet (cf. *e.g.*, No. 12, 24f., which reads: "432 × 432 = 186,624," also No. 16, 24, and No. 19, R., Col. II, 11, which originally read: "144 × 144 = 20,736"). Sometimes these colophons are of importance for the correct understanding of the multiplication table itself. Thus, *e.g.*, No. 15 can be read either "9 × 1 = 1," or "9 soss × 1 = 540," etc. The colophon, however, reading "500 × 1 = 500," the first mentioned interpretation is

[1] I read *dKar-gal*. For the reading *dE-GAL*, which in view of "Cun. Texts," Vol. II, 37 (*Bu*. 91-5-9, 381), li. 4, and *B.E.*, Series A, Vol. X, p. 40 (*Ardi-dE-GAL-MAH*), suggests itself, is excluded because of the oblique wedges in the sign after *ibu* (cf. Clay, *B. E.*, Series A, Vol. XIV, "List of Signs," No. 220, compared with No. 116). The reading *dKar-gal* (not *Gan-gal*) seems assured by a variant *dKár-gal* (most naturally read *dUN-GAL* by Clay, *B. E.*, Series A, Vol. XV, p. 56), if we may regard the first sign (*UN*, cf. Clay, *l.c.*, Vol. XIV, "List of Signs," No. 143) at the same time as a variant of *PISH*, *KIR*, *KÁR* (*ib.*, No. 171). But however this may be, in Vol. XV, No. 34, 2, we evidently have to read *bit dGa-la* **u** (instead of the *KI* of Clay's copy) *dKár-gal Nippurki*, "the house of Gula and Kargal in Nippur"). This deity *Kargal*, which was worshiped in Nippur at the time of the Cassite dynasty, cannot be compared with the well-known ideogram *dKUR-GAL*, *i.e.*, *dBêl*, *dAmmurru* (cf. Clay, *B. E.*, Series A, Vol. X, pp. 7f.; Peiser, *Urkunden aus der Zeit der dritten babylonischen Dynastie*, p. VIII). In all probability it was a Cassite deity, also contained in the name *mKu-ur-gal-zu* (V *R.* 44, 23ab), generally written *dKu-ri*(or *dKur-ri*)-*gal-zu* (cf. Clay, *B. E.*, Series A, Vol. XIV, p. 47). For the interchange of *a* and *u* before *r* in Cassite words cf. p. 17, note 4, above. In this case we would have to analyze *Kur(i)galzu* (= *ri'i bi(kashishi*, V *R.* 44, 23 ab, cf. Delitzsch, *Die Sprache der Kossaer*, p. 23) as *kargal* = *ri'i* and *zu* = *bishi*. For the present, however, it may seem equally possible to regard *Kur(i)galzu* as a Babylonian, not as a Cassite name. The element *galzu*, which erroneously was thought to be an Elamite or Cassite god (Scheil, *Délégation en Perse*, Vol. II, p. 8; Jastrow, *Die Religion Babyloniens und Assyriens*, p. 162; Clay, *B. E.*, Series A, Vol. XV, pp. 3 (note 3) and 54), is contained in quite a number of Babylonian names. Cf. *e.g.*, *A-ta-mar-GAL-zu* (= *Atamar-rabûzu* (= *rabûtsu*)) and *A-ta-mar-ra-bu-sa* (= *rabûtsu*), quoted by Clay, *l.c.*, from the time of the Cassite rulers, or *dDa-mu-GAL-zu* and *dE-a-GAL-zu* from the time of Hammurabi, or *dSha-mash-GAL-zu* and *Shar-ru-GAL-zu* (kindly communicated to me by Hommel) from the period of Sargon of Agade. Unless we regard *GAL-ZU* in these names as an ideogr. with an unknown meaning (cf. however *Lugal-gal-su*, Reissner, *Tempelurkunden aus Telloh*, 98, VII, 4), the most natural interpretation is to read *GAL-zu(su)* = *rabûzu* = *rabûtsu*, and in view of such names as *Ra-bu-ut*, *Ra-bu-ut-dShamash*, *Ra-bu-ut-dSin* (Ranke, *B. E.*, Series D, Vol. III, p. 137), to regard *GAL-zu* (in *Manishtusu*, A, Col. IV, 2, read "*Rabûzu*, the judge," not *Galzu-dajânu*), *dDamu-rabûzu*, etc., as abbrev. Semitic names, in which *zu* = *su* = *shu*, "his," refers to a deity. For a possible deity *Kar* (in *Kariqalzu*, if interpreted as Babylonian) cf. Daiches, *Altbabyl. Rechtsurkunden*, p. 19, and the names *Kar-ladum*, *Kar-kadum* and *Kari-ili* (Ranke, *l.c.*, p. 216).

[2] No. 8, 24, is perhaps to be changed into "1 × 72" (= "1 × 72 = 72") and to be regarded as a colophon indicating that the next lowest number of the series, to which this multiplication table ("1 × 90 = 90") belonged, was not "1 × 81," as we should expect, but "1 × 72." Cf. also p. 27, note 1.

In view of No. 16, 25, we also should expect the last line of No. 12 to indicate the next lowest multiplication table of the whole series, which would be "1 × 405" (= "1 × 405 = 405"). If the next highest number of the series was given, the closing line should read "1 × 450" (= 1 × 450 = 450). As however the last sign of this line is not clear, and the next highest number of a series is never given as a colophon, the real significance of this number remains obscure to me.

[3] The whole question as to the meaning of the multiplication tables will be discussed below.

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out of question. No. 16 closes with "750 × 750 = 562,500," followed by the colophon "720 × 1 = 720" (the next lowest number of the series).

Besides such single multiplication tables as published on Pls. 1–7, the Babylonians had tablets on which different multiplication tables were given together. Cf. Nos. 17, 18, 19, 22 (Rev.), 23 (Rev.) and Pl. VII, Rev. It is to be observed that this class of multiplication tables begins always with the highest number to be multiplied, and ends with the lowest. Thus No. 17, which can be easily restored (except the fifth number, which must remain doubtful), contained the following nine tables: 1080 × 1, 1000 × 1, 960 × 1, 900 × 1, [probably 810 × 1], 720 × 1, 600 × 1, 540 × 1, 500 × 1. Though very fragmentary, No. 18 has preserved remains of 2160 × 1, 1500 × 1 (Obv.) and 1000 × 1 (Rev., Col. II); No. 19, portions of 300 × 1, 240 × 1 (Obv.), 180 × 1, 150 × 1, 144 × 1[1] and 120 × 1 (Rev.); No. 22, Rev., portions of 1350 × 1, 1080 × 1, 960 × 1; No. 23, Rev.[2], portions of 1350 × 1 (Col. I), 1080 × 1, 1000 × 1 (Col. II), 900 × 1 (Col. III), 720 × 1, 600 × 1 (Col. IV), 500 × 1, 480 × 1 (Col. V), 432 × 1 (Col. VI). An autograph copy of Pl. VII, Rev., which contains the multiplication tables of very high numbers (among them 180,000 × 1, 162,000 × 1 and 160,000 × 1) will be published in Part 2 of this volume. For our present purpose it is sufficient to state that it is arranged like all the other tablets containing more than one multiplication table.

Including the Sippar tablet (25 × 1) and *K* 8527 (45 × 1)—both being also represented in the Nuffar collections[3]—and the colophons on Nos. 8, 15 and 16,[4] the following 44–46 multiplication tables are thus far known to me from the Temple School and Temple Library of Nippur (cf. *B. E.*, Series D, Vol. I, pp. 531f.):

[1] This table, as stated above, p. 18, closed with "[144 × 144 = 20]736." Supplement, therefore, "5 *shâr* 4 *nêr*" before "336."

[2] Contrary to the custom, according to which the Reverse of a tablet arranged in perpendicular columns is to be read from right to left, this Reverse (like the Reverse of other Nippur tablets) must be read from left to right. This follows from the mere observation that, if read as proposed, the multiplication tables here given follow the general principle (the highest number beginning and the lowest ending), while, if read from right to left, they would appear to have been written without any order. A comparison of No. 24, Rev., with No. 20, Rev., shows that the columns of the former also ought to be read from left to right. The printed headlines of my copy should be corrected accordingly: What is called there Col. VI should be changed into Col. I, and what is called Col. V should become Col. II, etc. Another peculiarity of some Nippur tablets (*e.g.*, C. B. M. 11,392 and 19,790, cf. also Bezold, "Catalogue," Vol. IV, p. 1392, note †) is that "before writing the text on the Reverse the scribe turned the tablet over from the right to the left hand, and not upside down as usual."

[3] For "25 × 1" cf. p. 16, above, and for "45 × 1" cf. No. 20, Obv., and No. 24, Rev., Col. V (to be changed into Col. II, as stated in the previous note).

[4] No. 8 = "72 × 1" (?, cf. p. 18, note 2, above); No. 15 = "500 × 1" (known also from No. 17, Rev., Col. III, 6 from end, and No 23, Rev., Col. V, 1–7); No. 16 = "720 × 1" (known also from No. 17, Rev., Col. I, and No. 23, Rev., Col. IV, 1–5).

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2 × 1	50 × 1 (No. 20, Rev., No. 21)	540 × 1
3 × 1	60 × 1	600 × 1
4 × 1	72 × 1	720 × 1
5 × 1	90 × 1	750 × 1
6 × 1	100 × 1	[810 × 1?] (No 17 Co IV broken off)
8 × 1	120 × 1	900 × 1
9 × 1	144 × 1	960 × 1
12 × 1	150 × 1	1000 × 1
18 × 1	180 × 1	1080 × 1
24 × 1	240 × 1	1350 × 1
25 × 1	300 × 1	1500 × 1
30 × 1	432 × 1	2160 × 1
36 × 1	450 × 1	3000 × 1 (No. 22, Obv., Col. II[2])
40 × 1 (No. 24, Rev., Col. IV[1])	480 × 1	160,000 × 1
45 × 1	500 × 1	162,000 × 1
	180,000 × 1	

In examining this series, we naturally ask the question, whether such multiplication tables are confined to certain numbers, or whether we may expect to find any number between 1 and 180,000 (or even higher) thus multiplied. In *B. E.*, Series D, Vol. I, p. 531, I inclined to the latter view, since abandoned. An attempt will now be made to show that a certain principle underlies these multiplication tables, the recognition of which will help us to determine their real purpose. Our attention is directed at once to three remarkable features: 1. Whenever several multiplication tables are written together, the highest number begins the series. 2. The numbers multiplied are not consecutive, but are often separated from each other by comparatively large intervals. 3. Besides 3 and 5, no undividable number or its multiple is multiplied (note the absence of 7, 11, 13, 14, 17, 19, 21, 22, 23, 26, 28, 29, 31, 33, 34, 35, etc.).

Since the quotient of a number dividable by more than one number becomes smaller the larger the divisor grows, the supposition forces itself upon us that the series of numbers multiplied on the same tablet may represent a descending series of quotients of an unknown high[3] number[4] divided by an increasing series of numbers contained in it. As, however, the divisors of a number are the same as the quotients in inverted order, it would be doubtful whether the single multiplication tables (cf. Nos. 1–16, No. 20,

[1] To be changed into Col. III (cf. p. 19, note 2, above).

[2] Unless to be read "50 × 1."

[3] For 180,000, 162,000 and 160,000 must also be contained in this number.

[4] Which itself, however, must not be dividable by 7, 11 nor any other higher undividable number or its multiple.

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Obv. and Rev., No. 21, Obv. and Rev., No. 22, Obv.) are to be regarded as multiplied divisors or quotients. In view of the circumstance that the forty odd multiplication tables given above most probably do not represent all the numbers that used to be multiplied, and furthermore that we do not know whether the latter are divisors (or quotients) of one or more unknown high numbers, the solution of the problem seems to be most difficult. Fortunately, however, there are a number of mathematical tablets known from Nippur (four of which are published here, cf. No. 20, Rev., No. 21, Rev., No. 22, Obv., and No. 24, Rev.) which throw considerable light on the whole question.

These tablets are all fragmentary and otherwise mutilated, but a study and comparison of the cuneiform signs preserved on them enable us to restore a part of their original text completely. It is alike on all of them and reads transliterated as follows:

1	8,640,000 *A-AN*	25	518,000
2	6,480,000	27	480,000
3	4,320,000	30	432,000
4	3,240,000	32	405,000
5	2,592,000	36	360,000
6	2,160,000	40	324,000
8	1,620,000	45	288,000
9	1,440,000	48	270,000
10	1,296,000	50	259,000
12	1,080,000	54	240,000
15	864,000	60	216,000
16	810,000	64	202,500
18	720,000	72	180,000
20	648,000	[80	162,000]
24	540,000	[81	160,000]

According to No. 20, Rev., which is better preserved than any of the other three fragments, this text (being written three times alternately with 50 × 1) closed with "72 180,000." Observing at once that the first eighteen multiplication tables of the list published above (p. 20) are among the numbers standing at the beginning of the lines of this restored text, and that the last number of this text (180,000) is also one of the highest multiplication tables thus far known (Pl. VII), I continued the calculation to 81, thereby ascertaining that the other two high multiplication tables quoted from Pl. VII on p. 20, above (162,000 × 1 and 160,000 × 1), are identical with the closing numbers of the next two lines of our restored text.

This interesting text may be described as a division table, containing the divisors of

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12,960,000 (= 60^4 or 3600^2) to 72 in an increasing series (the left numbers), together with their corresponding quotients in a descending series (the right numbers). If we continued the calculation still further, we would obtain all the numbers found in our list of multiplication tables and many additional numbers, which doubtless also formed part of the complete series of multiplication tables. For it is a fact that **all** the numbers multiplied on p. 20 are divisors or quotients of 12,960,000.

No. 22, Obv., Col. I, is especially important, because the divisors and quotients are not simply placed side by side, as on the three other fragments, but are separated by the cuneiform signs *GAL-BI*. A glance at No. 25 and Reisner's observations in *Z. A.*, Vol. XI, p. 423, enables us to restore the beginning of this tablet as follows:

Line	1.	*IGI*— 1—*GAL-BI* (*i.e.*, its two-thirds)	=	8,640,000 *A-AN*
"	2.	*IGI*— 2—*GAL-BI* (its half)	=	6,480,000
"	3.	*IGI*— 3—*GAL-BI* (its third part)	=	4,320,000
"	4.	*IGI*— 4—*GAL-BI* (its fourth part)	=	3,240,000
"	5.	*IGI*— 5—*GAL-BI* (its fifth part)	=	2,592,000
		etc. etc.		etc.
"	13.	*IGI*—18—*GAL-BI* (its eighteenth part)	=	720,000

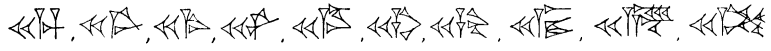
I may add that on some of the division tables examined by me a third (evidently abbreviated) expression is found, *e.g.*, "*IGI* 3 4,320,000": "*IGI* 4 3,240,000," etc.

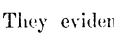
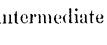
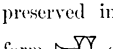
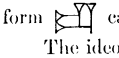
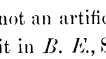
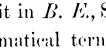
The number meant by *BI*, "its," is 12,960,000. The divisor (*IGI-GAL*, "having an eye," evidently thus designated as "the decider" (*ershu*) or "determinator" (*i.e.*, the denominator) of a fraction, and perhaps to be read *igigallu* or *ershu* (syn. of *mudû*)) is expressed in each case by the number standing between *IGI* and *GAL*, while the quotient is characterized by *A-AN* (*i.e.*, Sumerian *am*, or Assyrian *ma*, V *R.* 22, Obv. 30 a-d) attached to the last number,[1] which thereby becomes distributive.[2] Like the ideogram *IGI-GAL*, expressing our sign of division (:) or our fraction line (/), the sign of

[1] *A-AN* is generally written only once (after the first quotient), on some tablets examined by me (cf. No. 21, Rev.) twice (also after the second quotient). It is doubtless to be supplemented after every quotient.

[2] We therefore should translate more exactly: "12,960,000 divided by 2 is 6,480,000 each" (= *je* 6,480,000), "12,960,000 divided by 3 is 4,320,000 each" (= *je* 4,320,000), etc. That *A-AN* (or *-ta-A-AN*) placed after a number was originally not regarded as a mere determinative, but actually pronounced by the Babylonians, who thereby rendered a number distributive, was already supposed by Jensen in Schrader's *K. B.*, Vol. VI, p. 346. An especially instructive example is furnished by Strassmaier, *Cambyses* 124, which is to be translated: "3 oxen, 6 *qa* each (*-ta-A-AN*) [per day], *i.e.*, 3 *gur* (here correctly without *A-AN*) barley, feed for the month of [*Kislîru*]; 6 oxen, 3 *qa* each (*-ta*) [per day], *i.e.*, 3 *gur* barley, feed for the month of [*Kislîru*]. Total: 6 *gur* barley, 1[eed] for 9 oxen, from the eighth day [of the month of *Taskritu*]," followed by the date. No less instructive is the frequent phrase known from the late Babylonian contract literature, *ishtên(-en)tama shaṭîri il(te)ki*, which cannot be translated "*ein Schriftstück nahmen sie*" (Meissner, *Supplement zu den Assyrischen Wortesbüchern*, p. 20), but "*sie nahmen* **je** *ein Schriftstück*" (= "they have **each** taken a document," cf. Kohler and Peiser, *Aus dem Babylonischen Rechtsleben*, III, p. 44). This *ishtên-*

multiplication (×), as we saw above (p. 16), can either be omitted, or it is rendered by the ideogram *A-DU*, resp. *A-GUR* (cf. Nos. 9 and 11). I regard the latter only as a variant or an abbreviated form of *A-DU*. This explanation suggests itself in view of the ligature (cf. p. 15, above) used for *A-DU* on certain Sippar tablets, in view of the fact that *A-DU* and *A-GUR* occur in the same text (cf. No. 9, 1: *A-DU*, while all the other lines offer *A-GUR*), and also in view of other variants occurring in the mathematical tablets from Nippur, notably the numerous variants of "19,"[1] some of which may be merely scribal errors:



They evidently all go back to the form  or  (20 — 1 = 19). The intermediate sign between *DU* () and the so-called *GUR* () is probably preserved in the form  (No. 13, 21)[2] or  (No. 7, 23), from which the form can easily be derived.

The ideogram *A-DU* (= ×), **"times"** (doubtless to be read *a-rá* in Sumerian), is not an artificial ideogram derived from Semitic *adâ*, "time," as I was inclined to regard it in *B. E.*, Series D, Vol. I, p. 532, but is of Sumerian origin, like all the other mathematical terms known to us, including the *A-AN* (= "*je*," rendering a number **distributive**) and *IGI-GAL* (= **"denominator,"** used to express a fraction) in the division tables; *LAL* (= —), **"minus"** (cf. Jensen, *Die Kosmologie der Babylonier*, p. 106, note 2; King in *Z.A.*, Vol. X, p. 396; Reisner in *Sitzungsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin*, 1896, p. 425), *SI-A* (= +), **"plus"** (Reisner, *l.c.*), *ÎB-DI*, **"square,"**[3] and *B.A-DI-E*, **"cube"**[3] (the latter two expressions

tāma (or *ishtēnama*, cf. Strassmaier, *Cambyses* 119, 8) is written either *ishtēn-a-ta-ma* (*Camb.* 117, 21), or *ishtēn-ma-ta-ma* (proof passage mislaid), or *ishtēn-ta-A-AN* (= *ma*, *Darius* 531, 11), or *ishtēn-a-ta-A-AN* (= *ma*, *Camb.* 257, 12; 279, 10), or *ishtēn-ma-ta-'a* (= *wa-ma*, *Cyr.* 211, 8), or *ishtēn-na-a-ta* (= *ishtēnātā ishtēnātā'a* = *ishtēnātāwa* = *ishtēnātāma*, *Darius*, 257, 12), or *ishten-ni-ta-'a* (*Camb.* 253, 20). Cf. also the interchange of *arḫa-a-ta-'a* (*Nabon.* 282, 6) and *arḫa-ta-A-AN* (*B. E.*, Series A, Vol. IX, 66, 6), "*monatlich*," "each month." Finally I call attention to the peculiar fact that, like *KAN* and *KAM*, *A-AN* is used as a determinative after ordinal numbers (thus far always preceded by *shattu*) in certain documents from the time of the Cassite rulers. Cf. Peiser, *Urkunden aus der Zeit der dritten babylonischen Dynastie*, Nos 89, 28; 102, 19; 111, 17; 116, 2 and 22; 125, 9; 135, 22; 138, 23.

[1] Cf. No. 1, 19 | No. 17, Rev., Col. II, 7 f. e. | No. 11, 19 | No. 17, Obv., Col. IV, 8; No. 19, Rev., Col. I, 6 | No. 10, 19 | No. 4, 19; No. 16, 19; No. 20, Rev., Col. III, 5 f. e.; No. 21, Obv., 19; No. 23, Rev., Col. III (to be changed into Col. IV), 12, and Col. V (to be changed into Col. II), 3 | No. 9, 19 | No. 5, 19 | No. 15, 19 | No. 19, Obv., Col. IV, 17. Cf. also IV *R.*[2] 37, variants.

[2] Known also from other inscriptions, cf. the sign lists published by Clay in *B. E.*, Vol. XIV (No. 76), and Vol. X (No. 64).

[3] The references to the mathematical tables in which *ÎB-DI*, "square," and *B.A-DI-E*, "cube," occur, are given

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being regarded erroneously by Hommel as Semitic verbal forms = "*ibdi, badi,*" "(*das u. das*) *kommt heraus*" (cf. *Grundriss*, p. 287, note 1).[1]

on p. 13, note 1, above. For the sake of convenience I have distinguished throughout the above discussion between Babylonian "tables of squares" and "tables of square roots," retaining the title assigned to the latter class by Sir Henry Rawlinson (cf. IV R[1] 40), who first recognized the true character of these "tables" (in "Journal of the Royal Asiatic Society," Vol. XV, p. 218). Strictly taken, however, both classes are "tables of squares" differently expressed and differently arranged. Cf. IV. R[2] 37 (= *Br. Mus.* No. 12,136), which offers the following three columns:

1 *a-rá* 1 1	1 *e* 1 *ib-di*	1 *-e* 1 *ba-di-e*
2 *a-rá* 2 4, etc.	4 *-e* 2 *ib-di*, etc.	8 *-e* 2 *ba-di-e*, etc.

Tables arranged according to the manner of Col. I (1 × 1 = 1; 2 × 2 = 4, etc., cf. Pl. 16, No. 26, and Pl. X, Nos. 14f. of the present volume), *i.e.*, tables in which the idea of "square" is expressed by repeating the number to be squared, with or without *a-rá*, "times," placed between them, are only a special kind of multiplication tables. Tables arranged according to the manner of Col. II (1 = 1²; 4 = 2², cf. Pl. 16, Nos. 27 and 28, Pl. X, Nos. 13 and 14), *i.e.*, tables in which the idea of "square" is expressed by a technical term *ÎB-DI*, "square," cf. *e.g.*, Oppert in *Z. A.*, Vol. XVII, pp. 60f.) placed after the number to be squared (or the root of the square) correspond more to our modern tables. The meaning of "*E*" standing between the square and its root in the latter class of texts is not yet quite clear. Lenormant's explanation offered in his *Essai sur un Document Mathématique Chaldéen*, p. 7, and closely connected with his erroneous view of the Babylonian system of numbering, is untenable. But I am also unable to accept Hommel's interpretation (to be inferred from his *Grundriss*, p. 287, note 1, and confirmed by him in a letter to the writer), according to which "*E*" is a technical term used to express both "square" and "cube," *i.e.*, "power" (Oppert, *L'étalon des mesures assyriennes*, p. 23), *e.g.*, "*9 als Quadrat von 3 kam heraus*," or "*27 als Cubus von 3 kommt heraus*," while *ibdi* and *badi* are Semitic verbal forms. For apart from the fact that all the other terms used in our mathematical texts are to be explained as Sumerian and, therefore, *ÎB-DI* and *BA-DI-E* most naturally also, it would be hard to understand, why the preterite "*ib-di*" (*kam heraus*) is used in the tables of squares, while *ba-di-e* (= *badi*, evidently regarded by Hommel as a permansive, which however can read only *bādi*) is confined to the table of cubes. Besides this "*E*" does not seem to have been essential for a correct understanding of the tables of squares and cubes; for it is omitted altogether in Scheil, *Sippar*, p. 48 ("*Autre tablette*"). Moreover from Pl. 16, No. 28 (cf. Pl. X, No. 14), where the inscription is arranged in two columns, we learn that "*E*" is not to be connected with the following, but the preceding number. The most natural explanation of this "*E*," therefore, seems to be, to regard it merely as the so-called "*Verlangerungszeichen*" of the first number (like the "*E*" often found after *luqal* in the dates of early Babylonian documents), which, according to Haupt, *A. S. K. T.*, p. 135, can be used or omitted without any apparent modification of the meaning of the preceding word. Evidently this "*E*" was more frequently employed than omitted in this class of texts, because it separated two numbers (square and root) very effectively, thereby considerably facilitating their reading in closely written lines. The Sippar text just quoted is remarkable in still another way, the ideogram A-AN (= Sum. *am*, Assyr. *ma*), rendering a number distributive, being placed after the number to be squared. Cf. *e.g.*, li. 3: "1156 = 34 A-AN *ÎB-DI*," *i.e.*, literally: "1156 = 34 each square" (or 34 × 34) a writing easily to be explained in view of what has been stated above (p. 22, note 2), for $\frac{1156}{34}$ = 34 A-AN.

As over against *Th.* 253 (*Verzeichnis der Vorderas. Altertumer, Koniigl. Museen zu Berlin*, p. 65), which containing the second half of a table of squares from 1² to 60², appropriately begins with "961 = **31²**," the Nippur tablet published on Pl. 16, No. 28, begins with "900 = **30²**," *i.e.*, with the line forming the closing line of the first tablet of the Berlin table of squares. The reason for this seemingly strange beginning is readily understood. Thirty (= ½ soss) and 30² (= (½ soss)² = ¼ *shār* = 900 = 15 soss) being round numbers easily kept in mind, they evidently were used as a means of finding rapidly the squares of the following numbers from 31 to 59 by applying the **binomial theorem (a + b)² = a² + 2 ab + b²**, which for this very reason must have been known to the Babylonians in some form or other. Cf. *e.g.* 37² = (½ soss + 7)² = (½ soss)² (or 15 soss) + 2 × ½ soss (or 7 soss) + 7² (or 49) = 22 soss + 49.

[1] The ideogr. *ÎB-DI*, "square," occurs also in the interesting text Pl. 15, No. 25a, Col. I, 4 f.e. and last line, Col. II, 13 f.e., which will be discussed in part 2 of the present volume. Cf. likewise the fifth and sixth lines of Scheil, *Sippar*.

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A word must be said with regard to the first line of the division tables here published. They all read: "1 8,640,000 *A-AN*." The quotient 8,640,000 being $\frac{2}{3}$ of 12,960,000, we should rather expect "$1\frac{1}{2}$" instead of "1" as its divisor, for 12,960,000 divided by $\frac{3}{2}$ is $= 12{,}960{,}000 \times \frac{2}{3}$. I am unable to explain this strange phenomenon. Possibly we have to regard it as an abbreviated expression well understood by the Babylonians.

Besides the division tables from the temple library of Nippur, which are all based upon 12,960,000 ($= 60^4 = 3600^2$) as their dividend, I know of only one other division table, which once belonged to the library of Ashurbânapal in Nineve. Four lines of this fragment, marked *K* 2069, were published by Bezold, who describes it as "probably containing mathematical calculations" ("Catalogue," Vol. I, p. 400). This tablet indicates the fraction by *IGI* alone (the abbreviated term referred to above, p. 22).

No. 428 (p. 48), li. 5, "..... 109 *mi-nam ÎB-DI*"; li. 6, "..53 *ÎB-DI*." Since ".. 53" contains "09" (li. 5) as its last 2 numbers, it is evident that the number preceding *ÎB-DI* in li. 6 was the square root of the number which stood in li. 5. Incorporating the result of my examination of the original, I translate these two lines accordingly: "[Total: ... +] 6 (× 216,000) + 5 (× 3600) + 6 (× 60) + 40 + 9 = ... 409, with regard to what [Accusative (*minâm*), Oppert, therefore, correctly "*wovon*"? "of what"?] is it the square? It is the square of .. 53." Oppert in *Z.A.*, Vol. XVII, p. 61, restored the two numbers contained in lines 5 and 6 as follows: li. 5, "126,409" and li. 6, "653." But the two numbers must have been much higher. Oppert's treatment of the entire inscription is most arbitrary. In order to prove his theory, he was obliged to make very radical changes in the cuneiform text offered by Scheil. Examining Oppert's transliteration, I found it difficult to believe that an ancient Babylonian scribe or a modern Assyriologist could have made all the mistakes imputed to the one or the other by Oppert. Profiting from my annual visit to the Imperial Ottoman Museum, I copied *Sippar*, No. 428, September 21, 1906. The results of my recent examination may be summed up briefly as follows:

The fragmentary text published by Scheil consists of seven lines written on the Obverse of a lens-shaped clay tablet. The upper part of the Reverse also bears traces of an inscription of three lines (apparently numbers), for the greater part badly effaced and otherwise damaged. The first line given by Scheil is the first line of the tablet. **Li. 1:** The second wedge of the first number ("2") is somewhat effaced. The fifth number of this line is scarcely "4" (Scheil) but "5"; for though only the two lower wedges and the lower end of the right upper wedge are preserved, the "5" is certain, because everywhere in our text the "4" is written with the sign *sha* (*i.e.*, with one lower wedge), never with the sign *za* (*i.e.*, with two lower wedges). **Li. 2 and 3:** The numbers given by Scheil are surely correct. **Li. 4:** In the first sign I recognized two more wedges below the three given by Scheil. To judge from their position I would regard this first number to be a "5," like the second number of the same line. Immediately after the latter there is a small break in the tablet, by which possibly a small number was destroyed. **Li. 5 and 6:** The cuneiform signs given by Scheil are correct, except the first character seen in li. 5, which I regard as a "6" rather than a "5," because the two right lower wedges stand exactly under the corresponding upper wedges. The first lower wedge is broken away. As Scheil did not endeavor to give a palæographically exact copy of the original, he did not place the single numbers of the second and following lines exactly where they stand on the original with regard to the characters of the first line. We consequently gain the impression from his copy that only one sign is broken away at the beginning of li. 5 and 6, while, as a matter of fact, 2–3 signs are wanting at the beginning of li. 5 (the first sign given by Scheil stands in reality almost entirely below the "30" of li. 4), and 3–4 signs at the beginning of li. 6, and about as many at the beginning of the last line. **Li. 7:** Before the "30" (given by Scheil as the first sign after the break) two small perpendicular wedges (the one written above the other) are visible, representing the last wedges of either a "5" or a "6." The sign omitted by Scheil before "*ab*" is clearly the sign "*ur*(*lik*)," evidently regarded by Scheil as "*ṭu* = *shiqlu*," to judge from his translation "*sicles*"(?).

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On the basis of the few lines given by Bezold, the dividend seemed to be 15,120,000 (= 12,960,000 [𒌋] + 2,160,000 [𒁹]).[1] But remembering my experience with the Nippur tablets, the dividend of which had to be increased as often as a new fragment was added, until the complete text had been restored, I asked King for a copy of the entire fragment, which he kindly placed at my disposal. It confirms Bezold's statement that the line designated by him as Obv., li. 13, is the last line of the Obverse. The beginning of this line, as sufficiently indicated by the remaining horizontal stroke (used by the scribe exclusively to fill out the empty space of a line with only one large number at the beginning), and supported by my calculation, must have read "*IGI* 4." Apart from the restoration of these two characters, the end of the Obverse and the beginning of the Reverse are entirely preserved, so that the twenty-eight lines or portions of lines inscribed on the fragment form a continuous inscription. This is of importance for our deciphering. For owing to the absence of a zero in Babylonian, every 𒌋 or 𒁹, as illustrated by the following scale (which may be continued indefinitely),

𒌋	𒁹	𒌋	𒁹	𒌋	𒁹	𒌋	𒁹	𒌋
12,960,000	**2,160,000**	**216,000**	**36,000**	**3,600**	**600**	**60**	**10**	**1**

can be read in many different ways, unless determined by the context and a sufficient number of smaller figures following. Each line of the left column of *K* 2069 beginning with either a "2," "3" or "4," and of the right with a "10," it is easy to ascertain the actual values of these first numbers by determining their position in the longest number preserved in each column. The longest number in the left column having six figures and ending in "20" (Obv., li. 11), the value of the first figure (a "2," "3" or "4") in each line of this column is obtained by multiplying this figure with 216,000. The longest number in the right column consisting of nine figures and ending in "40" (Rev., li. 24), the first figure (a "10") in each line of this column has the value 129,600,000.

The third line given by Bezold, *l.c.*, is therefore to be transliterated as follows: *IGI* 3 × 216,000 (= 648,000) | 23 × 12,960,000 (= 298,080,000) + 2 × 2,160,000 (= 4,320,000); in other words $\frac{x}{648,000}$ = 302,400,000, or x = 302,400,000 × 648,000 = 195,955,200,000,000, *i.e.*, 12,960,000² (= 167,961,600,000,000, expressed by 𒌋) + (2,160,000² × 6), *i.e.*, the next lowest unit (𒁹) in the scale of numbers (= 27,-

[1] These four lines would read accordingly, li. 2: *IGI* 9600 | 1575; li. 3: *IGI* 10,000 | 1512; li. 4: *IGI* 10,800 | 1400; li. 5: *IGI* 11,250 | 1344.

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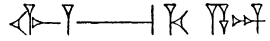
993,600,000,000). *K.* 2069, therefore, is a division table, containing a number[1] of divisors of 195,955,200,000,000 (=) in an increasing series (in the left column), with their corresponding quotients in a descending series (in the right column). In all probability the text, to which this tablet belongs, began:  , "the 216,000th part of 195,955,200,000,000 = 907,200,000."

If we would take the time and trouble to find all the other divisors contained in 195,955,200,000,000, we could easily restore the entire text. For our present purpose it will be sufficient to fill out the *lacunæ* in the thirteen lines preserved on the Obverse and in the first ten lines of the Reverse. These twenty-three lines restored read as follows:

K 2069, Obv.	1:	*IGI*	540,000	=	362,880,000[2]
	2:	*IGI*	576,000	=	340,200,000[3]
	3:	*IGI*	600,000	=	326,592,000
	4:	*IGI*	648,000	=	302,400,000
	5:	*IGI*	675,000	=	290,304,000
	6:	*IGI*	691,200	=	283,500,000
	7:	*IGI*	720,000	=	272,160,000
	8:	*IGI*	729,000	=	268,800,000
	9:	*IGI*	768,000	=	255,150,000
	10:	*IGI*	777,600	=	252,000,000
	11:	*IGI*	800,000	=	244,944,000[4]
	12:	*IGI*	810,000	=	241,920,000
	13:	[*IGI*	864,000][5]	=	226,800,000
Rev.	14:	*IGI*	874,800	=	224,000,000
	15:	*IGI*	900,000	=	217,728,000
	16:	*IGI*	911,250	=	215,040,000
	17:	*IGI*	921,600	=	212,625,000

[1] Even the list of divisors given by the scribe in the preserved 24 lines is not complete. For, to quote only one example, 750,000 (omitted by the scribe) also is a divisor (with the corresponding quotient 261,273,600). The same incompleteness is frequently found on the Nippur division tables. Cf. p. 18, note 2, and Pl. 11, Col. I, 29, Col. IV, 28, 29.

[2] There are traces enough preserved in this line to prove the correctness of my restoration: two perpendicular wedges (each = 216,000) and three angular hooks (each = 36,000) in the left column. The horizontal stroke following 8 (× 12,960,000) in the right column shows that the mutilated end of this line contained no other number.

[3] For lines 2–5 see the text published by Bezold. In the *lacuna* of li. 2 (at the extreme right) must have stood a "15" (each unit = 216,000).

[4] The traces of the last number seem to point to "5." King adds: "Partly erased by the scribe." The calculation settles the question, the number required being "4" (× 216,000).

[5] For the restoration of the first number in the left column, "4 (× 216,000)," cf. p. 26, above.

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Rev. 18:	*IGI*	933,120	=	210,000,000
19:	*IGI*	937,500	=	209,018,000
20:	*IGI*	960,000	=	204,120,000
21:	*IGI*	972,000	=	201,000,000
22:	*I*[*GI*	1,036,800][1]	=	189,000,000
23:	[*IGI*	1,080,000][2]	=	181,440,000

In connection with the multiplication and division tables just treated a word should be said about the interesting text, No. 25, which I transliterate as follows:

Li. 1:	125	720	Li. 9:	2000	18
2:	*IGI-GAL-BI*	103,680	10:	*IGI-GAL-BI*	6480
Li. 3:	250	360	Li. 11:	4000	9
4:	*IGI-GAL-BI*	51,840	12:	*IGI-GAL-BI*	3240
Li. 5:	500	180	Li. 13:	8000	18
6:	*IGI-GAL-BI*	25,920	14:	*IGI-GAL-BI*	1620
Li. 7:	1000	90	Li. 15:	16,000	9
8:	*IGI-GAL-BI*	12,960	16:	*IGI-GAL-BI*	810

We observe (*a*) that the first numbers of all the odd lines (1, 3, 5, 7, 9, 11, 13, 15) form an increasing, and all the numbers of the even lines (preceded by *IGI-GAL-BI* = "its denominator") a descending geometrical progression; (*b*) that the first number of every odd line can be expressed by a fraction which has 12,960,000 as its numerator and the closing number of the corresponding even line as its denominator, in other words $125 = \frac{12,960,000}{103,680}$; $250 = \frac{12,960,000}{51,840}$; $500 = \frac{12,960,000}{25,920}$; $1000 = \frac{12,960,000}{12,960}$; $2000 = \frac{12,960,000}{6,480}$; $4000 = \frac{12,960,000}{3,240}$; $8000 = \frac{12,960,000}{1,620}$; $16,000 = \frac{12,960,000}{810}$. But the closing numbers of all the odd lines (720, 360, 180, 90, 18, 9, 18, 9) are still obscure to me. Notwithstanding all my efforts to find a law in them or to solve the problem by the aid of competent American and European mathematicians, I have failed to get at their meaning. Suffice it to state that there seems to exist a certain relation between the first and the second number in each odd line. For if we write 125 (li. 1) = 2 *soss* + 5, 250 = 4 *soss* + 10, 500 = 8 *soss* + 20, 1000 = 1 *nêr* + 6 *soss* + 40, 2000 = 3 *nêr* + 200, 4000 = 1 *shâr* + 400, 8000 = 2 *shâr* + 1 *nêr* + 200, 16,000 = 4 *shâr* + 2 *nêr* + 400, and divide 3600 by the last figure

[1] The left column is to be restored thus: 4 (× 216,000) + 4 (× 36,000) + 8 (× 3600).

[2] The entire left column is broken off. The number which stood there was "5 (× 216,000)," followed by a horizontal stroke.

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thus obtained (5, 10, 20, 40, 200, 400, 200, 400), we obtain the last number of every odd line ($\frac{3600}{5} = 720$, $\frac{3600}{10} = 360$, $\frac{3600}{20} = 180$, $\frac{3600}{40} = 90$, $\frac{3600}{200} = 18$, $\frac{3600}{400} = 9$, $\frac{3600}{200} = 18$, $\frac{3600}{400} = 9$).

The question arises, what is the meaning of all this? What in particular is the meaning of the number 12,960,000 ($= 60^4$ or 3600^2), which underlies all the mathematical texts here treated, including the Sippar tablet and *K* 2069 and *K* 8527? The answer, as it seems to me, is partly given by Plato in his "Republic," Book VIII, 546, B-D, which contains the famous "Number of Plato,"[1] "notoriously the most difficult passage in his writings." According to James Adam, to whom we owe the latest thorough discussion of the entire passage,[2] accompanied by the necessary references to the immense literature written on the subject, "the difficulty lies in the Greek, and not in the calculations." The number occurs in the following context: There are four leading varieties of States and individuals (1. Timarchy, or the Cretan and Laconian State; 2. Oligarchy; 3. Democracy; 4. Tyranny) in addition to the perfect polity and perfect man. Inasmuch as the specific character of States is determined by that of individuals, there will be five leading types of individual character, embodied respectively in 1. the aristocratic, 2. the timarchical, 3. the oligarchical, 4. the democratical, 5. the tyrannical man. The commonwealths will be examined first and afterwards the individuals. How does Timarchy arise out of Aristocracy? It may be laid down as a universal rule that constitutional change is originated by dissension within the governing class. The Muses are invoked to tell "how first sedition entered." Everything that has a beginning has also an end. Even the ideal city, therefore, will in time perish and come to dissolution. But the cause of decay, not being contained in the ideal city itself, must come from without. What is this cause? How does this degeneration start? By wrong or inopportune marriages and births (*γεννήσουσι παῖδάς ποτε οὐ δέον*). Having indicated this cause and described the manner in which degeneration begins to take place, Plato proceeds to construct a "geometrical number" (*γεωμετρικὸς ἀριθμός*) out of the elements of the number which expresses the shortest period of gestation in the human kind (216 days). This "geometrical number" (12,960,000), which he calls "the

[1] In "The Laws," Book V, 737, E, Plato mentions another number, viz., 5040, as the number containing the greatest number of factors. This knowledge also probably goes back to Babylonian sources. For according to the Neo-Platonists, Pythagoras, whose method and calculations are closely followed by Plato in the famous number passage treated above, derived his mathematical science and doctrines from the East. Cf. also Winckler, *Die babylonische Kultur*, pp. 21f.

[2] Cf. James Adam, "The Republic of Plato, edited with critical notes, commentary and appendices," Vol. II, pp. 201–209 and pp. 264–306. My translation and interpretation of the number passage rests entirely on Adam's work and on a literal translation and a thorough oral interpretation of the difficult terms by my friend, Dr. W. A. Lamberton, Professor of Greek in the University of Pennsylvania, who in several important details differs from Adam. To both scholars I express my warmest thanks for all the benefit derived from their researches.

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lord of better and worse births," is the arithmetical expression of a great law controlling the Universe. According to Adam this law is "the Law of Change, that law of inevitable degeneration to which the Universe and all its parts are subject,"—an interpretation from which I am obliged to differ. On the contrary, it is the Law of Uniformity or Harmony, *i.e.*, that fundamental law which governs the Universe and all its parts, and which cannot be ignored or violated without causing an anomaly, *i.e.*, without resulting in a degeneration of the race.

The Greek text of the famous passage reads: *ἔστι δὲ θείῳ μὲν γεννητῷ περίοδος, ἣν ἀριθμὸς περιλαμβάνει τέλειος, ἀνθρωπείῳ δὲ ἐν ᾧ πρώτῳ αὐξήσεις δυνάμεναί τε καὶ δυναστευόμεναι, τρεῖς ἀποστάσεις, τέτταρας δὲ ὅρους λαβοῦσαι ὁμοιούντων τε καὶ ἀνομοιούντων καὶ αὐξόντων καὶ φθινόντων, πάντα προσήγορα καὶ ῥητὰ πρὸς ἄλληλα ἀπέφηναν· ὧν ἐπίτριτος πυθμὴν πεμπάδι συζυγεὶς δύο ἁρμονίας παρέχεται τρὶς αὐξηθείς, τὴν μὲν ἴσην ἰσάκις, ἑκατὸν τοσαυτάκις, τὴν δὲ ἰσομήκη μὲν τῇ, προμήκη δέ, ἑκατὸν μὲν ἀριθμῶν ἀπὸ διαμέτρων ῥητῶν πεμπάδος, δεομένων ἑνὸς ἑκάστων, ἀρρήτων δὲ δυοῖν, ἑκατὸν δὲ κύβων τριάδος. ξύμπας δὲ οὗτος, ἀριθμὸς γεωμετρικός, τοιούτου κύριος, ἀμείνόνων τε καὶ χειρόνων γενέσεων, ἃς ὅταν ἀγνοήσαντες ἡμῖν οἱ φύλακες συνοικίζωσιν νύμφας νυμφίοις παρὰ καιρόν, οὐκ εὐφυεῖς οὐδ' εὐτυχεῖς παῖδες ἔσονται.* "The divine creature (*i.e.*, the World brought of chaos into order) has a period comprehended by a final number (*i.e.*, the period which its creation occupies), whereas the human [creature has a period (of gestation) comprehended by a number] which is the first number (after the unit) in which root-and-square increases (*i.e.*, processes of multiplication) comprehending three distances (*i.e.*, the three dimensions, length, breadth and thickness) and four limits (*i.e.*, the points by which these dimensions are determined)[1] of (some) numbers (*i.e.*, the numbers to be cubed) that make both like (*i.e.*, square numbers) and unlike (*i.e.*, oblong numbers) and wax and wane (a description of the sides of the Pythagorean triangle), render all things conversable and rational with one another (*i.e.*, $3 \times 3^2 (= 3^3 = 27) + 4 \times 4^2 (= 4^3 = 64) + 5 \times 5^2 (= 5^3 = 125) = 216$); two of which (numbers to be cubed, namely) 4, 3 (forming two of the three sides of the Pythagorean triangle), coupled with 5 (by multiplication, *i.e.*, $4 \times 3 \times 5 = 60$) furnish two harmonies when thrice increased (*i.e.*, three times multiplied by itself, therefore $60 \times 60 \times 60 \times 60 = 12{,}960{,}000$)—the one equal an equal number of times (*i.e.*, a square number), so many (*i.e.*, 36) times 100 (*i.e.*, 3600^2), the other of equal length one way, but oblong: on the one side, of one hundred squares of rational diameters of five (*i.e.*, the nearest rational number to the real diameter of a square whose side is five, *i.e.*, to $\sqrt{50} = 7$; for $\sqrt{49} = 7$), diminished by one each (*i.e.*, $(49[= 7^2] \times 100)$

[1] According to Adam, the whole expression *αὐξήσεις—λαβοῦσαι* "means cubings and nothing more." "The period of the human creature" is accordingly the first number in which cubings make everything conversable and rational with itself. The numbers to be cubed are 3, 4 and 5.

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— $(1 \times 100) = 4900 - 100 = 4800$), or if from irrational diameters (of five), diminished by two (each) (*i.e.*, $(\sqrt{50})^2 \times 100 - (2 \times 100) = 5000 - 200 = 4800$), on the other hand, of 100 cubes of 3 (*i.e.*, $100 \times 3^3 = 2700$; the second harmony is therefore 4800×2700). This total number, a geometrical number (Adam: "a number *measuring the earth*"), is lord of better and worse births; and whenever our guardians in ignorance (of these underlying principles) promote marriages inopportunely, the offspring (of such unions) cannot be well endowed nor even favored of fortune."[1]

According to Adam the two harmonies of Plato furnished by $60 \times 60 \times 60 \times 60$ (*i.e.*, 3600^2 and 480×2700, both $= 12{,}960{,}000$) "represent two recurrent aeons in the life of the Universe, in which the World waxes and wanes alternately, the harmony 3600^2 measuring the cycle of Uniformity, and the harmony 4800×2700 the cycle of Dissimilarity described by Plato in the *Politicus*. Be this as it may (cf. also p 34, note 1, below), it goes without saying that the number 3600 rests upon the Babylonian sexagesimal system. From the fact that Plato constructs his number (12,960,000) out of the elements of the number expressing the shortest period of human gestation (216), it may be inferred that, according to Plato, both stand in a certain mathematical relation to one another. The smaller number (216) referring to days, it is safe to interpret 12,960,000 also as days. Now 12,960,000 days, expressed in years (360 days counted in the year), are equal to 36,000 years. And we know from Berosus, whose accuracy in all matters connected with the mythology and history of his people has been sufficiently tested (cf. Chapter I, above), that a period of 36,000 years (called "the great Platonic year," *magnus Platonicus annus*, in early astronomical treatises) was actually the duration of a Babylonian cycle. We also have shown above that all the multiplication and division tables from the temple libraries of Nippur and Sippar and from the library of Ashurbânapal are based upon 12,960,000. This coincidence can scarcely be accidental. We must necessarily come to the conclusion that Plato, or rather Pythagoras, whom he closely followed, borrowed his famous number and the whole idea of a decisive influence exercised by it upon the life of man directly from Babylonia. The very expression "lord of better and worse births," as a designation for something inanimate, points to Babylonian origin. Cf. the similar use of *bêlu*, "lord," in *bêlê qarâbi*, V *R.* 6, 17, literally "the lords of war," a designation for "war weapons," evidently thus styled because weapons are the supreme rulers in war, determining its final issue. Like divine beings or human allies endowed with reason, they, therefore, are "called upon" by the warriors to decide the battle (*usha'alû kakkêshunu*, Creation Story, IV, 92; *Sanh.* II, 77, etc.).

[1] While frequently differing from Adam in his interpretation of the Greek text, Hultsch also makes the two numbers referred to by Plato, 216 and 12,960,000. Cf. *Zeitschrift für Mathematik und Physik*, Vol. XXVII, *Histor.-liter. Abth.*, pp. 41–60. Observe that 216 also occurs in the of number *K* 2069 (p. 26, above).

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The Platonic number, 12,960,000, measuring a period in the lifetime of the Earth, and therefore (as Adam points out) called γεωμετρικός in the ordinary sense of the term as well as in the symbolic, is "the lord of better and worse births." In what sense this number, *i.e.*, the square of the highest Babylonian number designated by a special name (*shâr*), determines good and bad births has been explained in various ways. Adam believes the explanation of Plato's words to be simply this: that in the early stages of our cycle of 36,000 years, before disintegration and dissimilarity had gone far, Nature produced better children than later, because the Universe is growing worse. But this interpretation is scarcely sufficient. Evidently the Greek philosopher wants to bring out the double idea (*a*) that through the ignoring of a fundamental law of the Universe at some early time "strife was kindled," *i.e.*, disagreement arose, followed by a subsequent degeneration of the whole human race; (*b*) that the same fundamental law still governs the Universe, and that its violation at any time is accompanied by the same result. Though, then, it is true that all the births occurring at a later stage of our cycle of 36,000 years are comparatively worse than those at an earlier period, the former are by no means of equal value. On the contrary, Plato's words: "Whenever our guardians in ignorance (of these underlying principles) promote marriages inopportunely, the offspring cannot be well endowed nor even favored of fortune," necessarily imply that whenever the guardians do observe these principles, the children born will be well-formed and prosperous in life. Hence it follows that good births are not confined to an earlier stage of the life of the Universe and bad ones to a later one, but that good and bad births may occur at all times in our cycle. Whether a birth is good or bad is determined by the number 12,960,000, which for this very reason is called "the lord of better and worse births." The meaning of Plato's words, therefore, can be but this: In order to be a good birth, the birth of a child—*i.e.*, the consummation of its period of gestation, marked by its entrance into life—must stand in a certain relation to 12,960,000, as the arithmetical expression of a fundamental law of the Universe, which Adam called the "Law of Change," and the writer the "Law of Harmony."

But what is this law? How can this number influence or determine the birth and future of a child? The correct solution of the problem is closely connected with the Babylonian conception of the world,[1] which stands in the centre of the Babylonian religion. The Universe and everything within, whether great or small, are created and sustained by the same fundamental laws. The same powers and principles, there-

[1] Cf. Winckler's numerous writings devoted to the explanation of the entire system. Even non-Assyriologists will read with great profit a summary of his researches in his *Himmels- und Weltenbild der Babylonier als Grundlage der Weltanschauung und Mythologie aller Volker*, Leipzig, 1901; *Die babylonische Kultur in ihren Beziehungen zur unsrigen*, Leipzig, 1902; and *Religionsgeschichtler und geschichtlicher Orient*, Leipzig, 1906.

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fore, which rule in the world at large, the macrocosm, are valid in the life of man, the microcosm. It is the task of astronomy, which forms the foundation of the entire system, to prove this uniformity and harmony, and to determine those invariable laws which permeate the Universe in all its parts and subdivisions. For the starry firmament through which the gods principally reveal themselves is the great book, the *shiṭir shamê* ("the writing of heaven"), in which they have written the whole story of heaven and earth, its past, present and future. The astronomer studies and deciphers this divine writing, the astrologer interprets its meaning with regard to the life and affairs of man.

According to this conception, all institutions on earth, including the State[1] and family and even the different temples and cities scattered through the Babylonian plain, are fashioned after heavenly patterns; and all human knowledge and science, including mathematics and astronomy, even the number itself, the division of the circle into 360 degrees, the calendar, the system of measures and weights, are of divine origin (cf. Chapter I, p. 1). Everything existing in heaven is found in a lesser degree on earth, and whatsoever affects the life of the Universe affects the smaller circle of the life of man. The number 12,960,000 governs the Universe, for 12,960,000 days, as stated above, are equal to 36,000 years, which form a Babylonian cycle or constitute an aeon in the life of the Universe. As man is controlled by the same mathematical laws as the Universe, of which he forms a part or fraction, the same number 12,960,000 or one of its fractions (expressed by its divisors) must control the life of man. Now we know from another passage of the "Republic" (Book X, 615 B) that Plato reckoned the duration of human life as 100 years, or $100 \times 360 = 36{,}000$ days. Hence it follows that a day in the life of man corresponds to a year in the life of the Universe; in other words, the duration of a human lifetime forms the 360th part of an aeon of the Universe (or the 360th degree of a corresponding circle). Everything else in man's life from his birth to his death is governed by the same number or by one of its divisors, especially the period of gestation—*i.e.*, the time the child is in the womb of its mother—which must stand in a certain relation to 12,960,000 that the birth may be good and the subsequent life normal. The number assigned to the period of gestation by Plato in the passage translated above is 216, which "was known to the Pythagoreans as the ψυχογονικὸς κύβος, because it expresses the period of the seven months' child counted in days."[2] 270 is the Pytha-

[1] Observe that the number 60, with its multiples and divisors, is also the governing number throughout Plato's "Laws."

[2] As seen on p. 30, 216 is the first number in which the cubes of 3, 4, 5 occur. Adam calls attention to the fact that "it is also the cube of the number 6, which the Pythagoreans called the marriage number, owing, as we are told, to the fact that 6 represents the union of the first male number 3 and the first female number 2 ($3 \times 2 = 6$). In other respects also the number 216 maintains its character as a matrimonial and generative force: for it is the cube of the area of the zoogonic triangle and the product of the cubes of the first male and female numbers ($2^3 \times 3^3 = 216$) etc."

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gorean period of gestation for a nine months' child.[1] Each of these two periods must have inaugurated a lucky birth, for both numbers are divisors of 12,960,000. Likewise every other period will be regarded as lucky for the child's birth, if the number of days represented by it is a divisor of 12,960,000. In this sense the Platonic number is "the lord of better and worse births." 7, 11 and 13 are no divisors of 12,960,000, therefore they have continued even to the present to be regarded as unlucky numbers in the life and history of man. In this light examine the Babyl. sabbath question.

Future researches in the great mass of unpublished mathematical texts, omens and astrological forecasts, forming one of the most important branches of Babylonian literature, will doubtless throw more light upon the full significance of the Platonic number. For the present it must suffice by means of the Nippur tablets to have traced its origin to Babylonia and to have connected it with the fundamental Babylonian doctrine, according to which the same divine power manifests itself harmoniously in all parts of the Universe. In view of the importance attributed to this number by the Greek philosopher the tablets here published will receive an additional significance. They are not mere multiplication and division tables in our sense of the word, but have an astrological bearing. They evidently served as works of reference and as text-books to introduce students into mathematics as a means of astronomical and astrological calculations. For, as Bezold correctly stated (*Literatur*, p. 225), "*die Mathematik stand bei den Babyloniern-Assyrern, so viel wir bis jetzt wissen, vornehmlich im Dienste der Astronomie und letztere wiederum in dem einer Pseudo-wissenschaft, der Astrologie, die wahrscheinlich in Mesopotamien entstand, sich von dort aus verbreitete und bis hinein in die gnostischen Schriften und aufs Mittelalter vererbte, ohne dass wir aber bis jetzt im Stande sind, die Kette dieser ganzen Ueberlieferung, deren Glieder vielfach zerstückt sind, wiederherzustellen.*"

We close this chapter about the first mathematical texts from the temple library of Nippur, crystallized in the Platonic number 12,960,000, with the words of Adam (p. 208): "I know not what others will think, but to me it seems that the extraordinary range and elevation of its central ideas make the Platonic number worthy even of a writer who is full of 'thoughts that wander through eternity.' The connection between the Human Child and the Divine, the Microcosm and the Macrocosm, has played no small part in the history of human thought, and the story of a Great Year, with the hope which it affords of the ἀποκατάστασις of all things (Acts iii, 21), has been and is, in its religious setting, the solace and support of many a 'human child.'"

[1] Adam: "And 180, which = 210 [7 × 30] + 270 [9 × 30], is the sum of the usually recognized periods of gestation for children born after seven and after nine months. The Great Year of the Universe may therefore be denoted by a rectangle whose sides are respectively the longer period [270] and the sum of the longer and shorter periods of gestation [180] in the race of man, after it has been multiplied by the square of the Pythagorean perfect number 10 [representing the lifetime of man]."

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III.

ASHLU, ṢUBBÂN, NIUM, AGARINNU, ṢILLU.

The metrological texts here submitted will be discussed in Part 2 of the present volume, where I expect to complete the series of this class of tablets excavated at Nuffar. At the same time an effort will be made to restore the different tables of measures and weights with their corresponding equivalents from all the fragments at my disposal, according to the method adopted in Series A, Vol. I, Part 2, Pls. 38–42. For the present it may suffice to call attention to the fact that the existence of an *ammatu* of different standards, previously inferred by Lehmann[1] and others, is fully corroborated by the new tablets published on Pls. 20 and 27. They make us acquainted with two different kinds of *ammatu*, the one = 30 *ubânu* (Nos. 41 and 42; No. 30, Cols. I and II), the other = 24 *ubânu* (No. 30, Cols. III and IV). We also see that *ubânu* was not the lowest unit known, but that an *ubânu* could be subdivided again. For the one standard cf. 1 *ubânu* = 2 *x* (No. 41, and No. 30, Col. II), from which it follows that ½ *ubânu* was designated by a special name; and 1 *ubânu* = 10 *x* (No. 42, and No. 30, Col. I). For the other standard cf. 1 *ubânu* = 150 *x* (No. 30, Col. III, upper half), or 1 *ubânu* = 90 *x* (No. 30, Cols. III and IV), or 1 *ubânu* = ? *x* (No. 30, Col. IV, lower half).

From No. 30 we learn besides that a *ṣubbân* was equal to 5 *GAR*, and that an *ashlu* was equal to two *ṣubbân*.[2] For the text of Col. I, lines 16ff., should be restored as follows (keeping in mind that the scribe erroneously took ½ *GAR* as unit in lines 8ff.):

Li. 16–17: 5 (× 3600 = 18,000 *x*) = 10 *GAR ṣu-ub-bân* (or rather $\frac{10}{2}$ = 5 *GAR*, which are called a *ṣubbân*),

18: [10 (× 3600 = 36,000 *x*)] = *ash-lu GAR* (= $\frac{20}{2}$ = 10 *GAR* = 2 *ṣubbân*)

19–20: [15 (× 3600 = 54,000 *x*)] = *ash-lu* [*ṣ*]*u-ub-ban* (*i.e.*, 1 *ashlu* and 1 *ṣubbân* = 15 *GAR*)

[1] Cf. *Actes du huitième congrès international des Orientalists*, Vol. II, pp. 167ff.; *Zeitschrift für Ethnologie*, Vol. 21 (1889), pp. 245ff. Cf. also Johns, "Assyrian Deeds and Documents," Vol. II, pp. 196–218, and Zimmern, "*Das Princip unserer Zeit- und Raumeinteilung*," in "*Berichte der phil.-histor. Classe der Königl. Sächs. Gesellschaft der Wissenschaften zu Leipzig*," November 14, 1901, pp. 57ff.

[2] As to *ashlu* and *ṣubbân* cf. Meissner-Rost in *B. A.*, Vol. III, p. 358, and the Assyrian dictionaries.

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Li. 21: [20 (× 3600 = 72,000 *x*) = *shi-ni-*]*ta ash-lu* (*i.e.*, 2 *ashlu* = 20 *GAR*)
22–23: [25 (× 3600 = 90,000 *x*) = *shi-ni-t*[*a*[1] *ash-lu ṣ*[*u-ub-ban*] (*i.e.*, 2 *ashlu* and 1 *ṣubbân* = 25 *GAR*)
24: 30 (× 3600) = 108,000 *x*) = *sha-la-ash ash-l*[*u*] (*i.e.*, 3 *ashlu* = 30 *GAR*)
25–26: 35 (× 3600) = 126,000 *x*) = *sha-la-ash ash-lu ṣu-ub-ban* (*i.e.*, 3 *ashlu* and 1 *ṣubbân* = 35 *GAR*)
27: 40 (× 3600) = 144,000 *x*) = *ar-ba ash-lu* (*i.e.*, 4 *ashlu* = 40 *GAR*)
evidently continued to
Col. II, li. 6: [60 (× 3600) = 216,000 x = 6 *ash-lu*] (= 60 *GAR* = 1 *USH*).

At the rate of 30 *ubânu* to an *ammatu* we accordingly obtain the following scale for the Cassite period from No. 30, Cols. I and II (upper half), and Nos. 41 and 42:

1 *KAŠ-GID*	= 30 *USH*	(= 1800 *GAR*)
1 *USH*	= 6 *ashlu*	(= 60 *GAR*)
1 *ashlu*	= 2 *ṣubbân*	(= 10 *GAR*)
1 *ṣubbân*	= 5 *GAR*	
1 *GAR*	= 2 *qanâ* = 12 *ammatu*	
1 *ammatu*	= 30 *ubânu*	
1 *ubânu*	= 2 (resp. 10) *x*	

No less interesting are the three descriptive paragraphs occurring in No. 30, Cols. II, III and IV. The first may be transliterated and translated in this connection:

Col. II, li. 10: *an-ni-ti ubânu sha* 30 *ubâné*
11: 1 *ammatu am-mat* ^{she}*zêru* 10 *GI-MESH*
12: *sha* 1 *adapu*
13: *am-mat ni-um ŭ agarinnu*
14: *ŭ* 1 *ammat* ^{isu}*ṣillu*

i.e., "this is the *ubânu* at the rate of 30 *ubâné* to 1 cubit (*ammatu*), namely the cubit of a piece of land under cultivation, 10 *qanâ* long and 1 *qanâ* broad (cf. Johns, *l.c.*, p. 221), which (requires seed equal to)[2] a vessel called *adapu*, 1 cubit wide at its narrowest (= *nium*) and widest (= *agarinnu*) parts and 1 cubit high (= *ṣillu*).

If my interpretation of the three technical terms mentioned be correct, it necessarily follows that in the middle of the second pre-Christian millennium the Babylonians

[1] The excavating Arabs who(?) joined the preserved portions of this tablet (evidently found together) with a kind of date paste, placed the small fragment forming the left lower corner of the tablet a little too high. The printed number 25 (indicating the corresponding line of Col. I) should therefore be moved up one line.

[2] For this interpretaton cf. also Thureau-Dangin in *Revue d'Assyriologie*, Vol. IV, pp. 18f.

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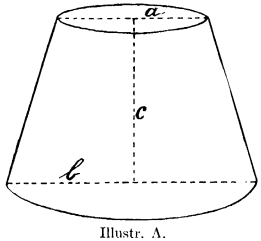
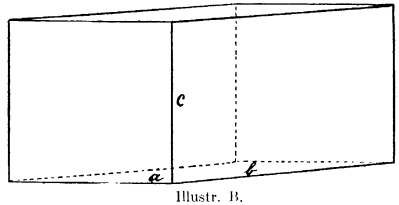
were able to determine the contents or volume of a certain vessel, called *adapu*, **from its three dimensions.**[1]

The more exact determination of *ni'um* and *agarinnu* depends upon our understanding of the shape of this vessel. The earliest Babylonian copper vessels (*A-DA-PA* is generally determined by *erû*, "copper") excavated by me have the form of a frustum of a right circular cone. Cf. Illustr. A, and Helm and Hilprecht in *Verhandlungen der Berliner anthropologischen Gesellschaft*, Feb. 16, 1901, p. 161 (No. 3). When applied to this class of vessels, *ni'um* (cf. Delitzsch, *Assyr. Handwörterbuch*, pp. 438b and 460, doubtless originally meaning "narrowness," like *nîtu*, cf. *nîtu* or *nîtish lamâ*, "*eng umschliessen*") must designate its narrowest part at the top, *i.e.*, the diameter of its circular opening (*a*), while *agarinnu* (as indicated by its ideogram, whose first compound means *rapâshu*, "to be wide," and its derivatives) must refer to the widest part of such a vessel at the bottom, *i.e.*, the diameter of its circular base (*b*). *Ṣillu*, "shadow," has here the meaning "altitude"[2] (*c*), evidently because the height of an object was frequently determined by ancient peoples from the length of the shadow it threw at a certain time of the day. As the two diameters of the vessel described are to be equal, the vessel in question must be a right circular cylinder .



Illustr. A.

If, however, it could be proved that the vessel in question was not circular but rectangular (cf. Illustr. B), *ni'um* would designate "the smaller" (*a*) and *agarinnu* "the larger side" (*b*) of its base, while *ṣillu* naturally would refer to its lateral edge or "altitude" (*c*).



Illustr. B.

As these three dimensions are to be equal, the vessel in question would be a rectangular parallelopiped whose faces are all squares, in other words a cube, . Which of the two vessels is meant in the inscription cannot yet be settled. The fact that early Babylonian vessels, whether made of stone, copper or terra-cotta, generally are circular, speaks in favor of a cylindrical vessel; but the circumstance that it is easier to

[1] In another connection already inferred by Lehmann in *Zeitschrift für Ethnologie*, Vol. IV, pp. 305ff.

[2] Cf. also *ṣillum elippum*, *K* 4378, Col. VI, 34

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find the volume of a cube than of a cylindrical vessel is in favor of the quadrangular vessel. The formula for calculating the volume of a cube is $V = a^3$. Its practical application in the second millennium before Christ would presuppose on the part of the Babylonians the knowledge of how to find the area of a square and of a rectangle in general. This, however, can be proved from ancient plans of fields accompanied by certain measures of length and surface, especially from a tablet of the period of the second dynasty of Ur, now in the Imperial Ottoman Museum of Constantinople, which was thoroughly discussed by several scholars.[1] As the Babylonian scribe of this important document calculated, as accurately as we do, the area of a right triangle from the length of its two legs, of a rectangle from its base and altitude, of a trapezoid from its two bases and altitude, it follows with certainty that at this early period **the Babylonians must have been familiar with the following theorems:** 1. The area of a rectangle is equal to the product of its base and altitude. 2. The area of a square is equal to the square of its side. 3. The area of a right triangle is equal to one-half the product of its base and altitude. 4. The area of a trapezoid is equal to one-half the sum of its bases multiplied by its altitude. And, furthermore, if the vessel described above was a cube, that (5) the volume of a rectangular parallelopiped is equal to the product of its base and altitude; (6) the volume of a cube is equal to the cube of its edge.

If, however, the vessel referred to was a circular cylinder, whose volume is expressed by $\pi r^2 h$ or $\frac{7}{4} d^2 h$, or, as its altitude is to be equal to its diameter, by $\frac{7}{4} d^3$, we necessarily would have to assume that the Babylonians of the second pre-Christian millennium, by practical experience or by mathematical calculation, had found out (1) that the circumference of a circle bears a constant ratio to its diameter, and (2) that they were familiar with the approximate value of this ratio (π), which, according to the calculation of Archimedes (*De Dimensione Circuli*), we generally express by $\pi = \frac{22}{7} = 3{,}14159$, but which, strictly speaking, is incommensurable. In view of the close connection between the Babylonian measures of length and time[2]—the former being practically a sub-divided circle unrolled—and in view of the importance which the circle plays in Babylonian astronomy, it is almost impossible to believe that the Babylonians should not have discovered this constant ratio and been familiar with its value, though they may have expressed it less accurately than Archimedes, simply by $\pi = 3$.

[1] Cf. Thureau-Dangin in *Revue d'Assyriologie*, Vol. IV, pp. 16ff., and the additional literature quoted p. 12, note (continued from p. 11), above.

[2] Cf. Lehmann in *Wochenschrift fur Klassische Philologie*, 1895, Cols. 127ff., and *Verhandlungen der Berliner anthropologischen Gesellschaft*, 1895, pp. 133f., and Zimmern, *l.c.* (cf. p. 35, note 1, above), pp. 56ff.

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IV.

A NEW CHRONOLOGICAL LIST.

The new chronological list which I have published as the last text of this volume (cf. Pls. XV and 30) is in more than one way of interest and importance. Since the discovery at Nippur of date lists of kings of the second dynasty of Ur (cf. *B. E.*, Series A, Vol. I, Nos. 125 and 127),[1] it was almost certain that sooner or later we would find chronological lists arranged after the manner of the lists of kings known as A and B, or Chronicle S, and at the same time giving us better information concerning the earliest history of Babylonia than the few fragmentary lines preserved on the Obverse of the last-mentioned chronicle (cf. Winckler, *Untersuchungen zur Altorientalischen Geschichte*, p. 153, upper fragment). For, though for some time familiar with quite a number of rulers earlier than the Ḫammurabi dynasty, and in some cases even able to catch a glimpse of their lives and deeds, we have thus far not succeeded in assigning to most of them their exact place in history.

Through the unearthing of documents dated in the reigns of some of the earliest rulers hitherto known—including such names as Entemena, Lugalanda, Urukagina, Sargon of Akkad, Narâm-Sin,[2] Ur-Ban, Nammahani, Gudea, Ur-Ningirsu, and others[3]—we obtained positive proof that the system of dating was practically the same in the fourth millennium as it was at the time of Ḫammurabi, and furthermore that the tablet of omens concerning Sargon and his son, as had been asserted before, contained historical facts based upon ancient lists of dates.[4] Considering this in connection with the fragmentary lines of Chronicle S, Cols. I and II (referred to above), and with the numerous copies of earlier inscriptions known from the library of Ashurbânapal[5] and from squeezes and copies of Neo-Babylonian scribes,[6] it became evident that a period not long

[1] Containing dates from the reigns of Dungi, Bur-Sin I, and Gimil-Sin in chronological order.

[2] Documents dated according to the reigns of Sargon I and Narâm-Sin have also been discovered at Nippur.

[3] Cf. Thureau-Dangin, *Les Inscriptions de Sumer et d'Akkad*, pp. 318ff.

[4] Cf. p. 6, note 4, above.

[5] Cf. pp. 5ff., above.

[6] Cf. *e.g.*, Hilprecht, *B. E.*, Series D, Vol. I, p. 517 (Sargon I); King in "Cuneiform Texts," Vol. IX, *Br. Mus.* 35,389 (Dungi), and *Br. Mus.* 22,457 (Kurigalzu, copied in the 8th year of Nabonidos); King, "The Letters and Inscriptions of Hammurabi," Vol. II, pp. 207 (Ammi-ditâna), etc.

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ago regarded as mythical, from which hundreds of dated documents are already known to us, must have been far from obscure to King Nabonidos, who refers to it, stating even the number of years lying between his own time and that of certain ancient rulers.

The new chronological fragment, written towards the end of the third millennium,[1] furnishes us another link in the chain of arguments, showing that chronological lists with the names of dynasties, the number of rulers belonging to each, and their respective years of government actually existed nearly 2000 years before King Nabonidos, whose statements have been subjected to a very severe criticism. Unfortunately what is left of this precious tablet is in such a deplorable condition, that for the present its Reverse alone could be published in an autograph copy. The Obverse, largely covered with crystals and other deposits, will have to be treated chemically before it can be deciphered. As it was impossible to clean it sufficiently without endangering the Reverse, which begins to scale off, it seemed wiser to leave the Obverse untouched, until all the questions which may come up in connection with my following discussion of the Reverse have been settled (as far as this is possible) by a repeated examination of every trace of a cuneiform sign preserved.

The phototype reproduction on Pl. XV, which may serve as an illustration of the real condition of the fragment, shows that both sides of the tablet were ruled and arranged in the same way. Effaced or indistinct as most of the characters on the Obverse are at present, we can state positively that it also contained the names of rulers arranged chronologically and followed by *mu*, "year," and a number. From the remains of a perpendicular dividing line, clearly visible near the upper right edge of the Reverse, and from the fact that the fragment reaches its greatest thickness at the right lower corner of Reverse, it follows that the tablet, when complete, was about double as wide and long as the preserved portion. Its inscription consisted of four columns of writing—two on the Obverse, and two on the Reverse—each numbering about forty-five to fifty lines, altogether containing the names of about 180 early Babylonian rulers. As the inscription discussed in the following pages forms the upper half of Col. IV, beginning with King Ur-Engur of Ur, whom I place about 2500–2200 B.C., there must have been known to the Babylonians of the time of Hammurabi about 135 pre-Enguric rulers—in other words about as many as we know at present to have lived between Ur-Engur and the fall of Babylon under Nabonidos (539 B.C.). If,

[1] The age of the inscription can be obtained approximately from palaeographical reasons and the consideration that Col. IV cannot have had more than 48 to 50 lines, 25 of which are partly preserved. Since the fragment closes with the first dynasty of Isin (li. 24), the 23 to 25 lines following, if indeed the entire column was inscribed, cannot have contained much more than the dynasty of Larsa and the first dynasty of Babylon. In this connection we call attention to the fact that the last column of the larger fragment of Chronicle S. (Winckler, *Untersuchungen zur Altorientalischen Geschichte*, pp. 144 and 153) was, in part at least, uninscribed.

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therefore, such chronological lists as the one here published were preserved in the temple archives and libraries of the Neo-Babylonian empire, which appears to me certain, the priests and scholars of Nabonidos were able not only to trace the history of their country to Sargon I, but to a considerably earlier period. The question arises, what is the age represented by this early period?

The chronological references gathered from Nabonidos' inscriptions with regard to the age of Sargon I (and of other early Babylonian rulers) will always remain of great value, as a means of checking our own results, unless it can be proved that the king or his scholars, as often has been asserted, "manufactured" this high date, in order to attribute a greater importance to their own archaeological researches. This proof, however, has never been furnished, notwithstanding the partly successful efforts of prominent scholars to show the impossibility of Nabonidos' assertions. We acknowledge, there are very serious difficulties connected with our accepting the king's statements. Lehmann, therefore, endeavored to reduce the 3200 years given by Nabonidos as the interval between Narâm-Sin, son of Sargon I, and his own government, by assuming a scribal error in the figure of the cuneiform texts (2200 years instead of 3200);[1] Winckler, by taking it for granted that the Neo-Babylonian scholars had "*keine Königsverzeichnisse mehr, welche bis auf Sargon's Zeit hinaufgereicht hätten.*"[2] For various reasons neither theory, however ably defended, met with much favor among Assyriologists and historians. It seems to me that the problem may be approached and solved in still another manner.

After a very careful re-examination of the entire material from which we usually construct the framework of Babylonian history, and with due consideration of the two sides of the chronological fragment under discussion, which at a first glance would appear rather to support Nabonidos' claims, I have felt it necessary to revise and modify my former conclusions. As sufficiently indicated in Chapter I and pp. 40f., above, I more than ever believe in the great age of Babylonian literature, and I have positive reasons for asserting that the Neo-Babylonian scholars had chronological lists, by means of which they could study the history of their country far beyond the time of Sargon I. At the same time, I find it no longer possible to reconcile Nabonidos' statements with certain well-known facts established by Assyriological research, not the least by Winckler's and Lehmann's own writings.

The results at which I have arrived may be summed up briefly as follows:

1. The c. 3200 years claimed by Nabonidos as the approximate age of Narâm-Sin rep-

[1] Cf. Lehmann, *Zwei Hauptprobleme der altorientalischen Chronologie und ihre Lösung*, Leipzig, 1898, pp. 186ff.

[2] Cf. Winckler in Schrader's K. A. T.³, pp. 17f.; also *A. F., Zweite Reihe* (XIII), p. 369; *Untersuchungen zur Altorientalischen Geschichte*, pp. 44f., with which compare Lehmann, *l.c.*, pp. 172ff.

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resent a round sum.[1] This sum was found by the royal scholars through actual honest calculations, based upon authentic chronological material at their disposal.

2. These calculations, however, are erroneous, like certain other chronological statements with regard to the age of early Babylonian rulers found in Nabonidos' texts and in other inscriptions,[2] because based upon an erroneous conception of the meaning of ancient Babylonian chronological lists. But the mistake made by the king and his scholars is no worse than the mistakes constantly made by us in our own search for truth. Nabonidos' erroneous view is the more pardonable, because at one time or other it was shared by practically every Assyriologist and, I dare say, is maintained even to-day by quite a number of scholars.

3. In all probability Nabonidos obtained his dates by adding the years of the different dynasties found in his lists, believing, with his scholars and other (Babylonian and modern) chronologists, that these chronological lists contained, in successive order, the names of all the rulers occupying the throne of Babylonia from the earliest times accessible down to his own government.

4. In examining these chronological lists we must, however, distinguish between kings of a certain city or district and kings or emperors (to use this more significant title) of Babylonia. For not all the members of the various dynasties recorded could lay claim to the more significant of these two titles. The chronological lists, then, instruct us only concerning certain cities and districts having a temporary hegemony over other Babylonian cities and states, by giving us the names of these cities or districts, together with the names and reigns of their local rulers constituting certain dynasties; but they do not give us any information as to how many of these local rulers were emperors of Babylonia at the same time.

5. The chronological lists, therefore, are of only relative value for the reconstruction of early Babylonian chronology. The names of those local kings who also were emperors of Babylonia, the duration of their reigns as emperors and their succession, must be established from other sources, notably by means of their titles assumed in their own inscriptions, through certain events referred to in documents dated in their reigns, and by other direct or indirect evidence drawn from their own and contemporaneous inscriptions or from certain historical references made by subsequent rulers.

[1] As formerly maintained by me, cf. *Assyriaca*, p. 95, note 2.

[2] Comp., *e.g.*, the statement concerning the 696 years (in *B. E.*, Series A, Vol. I, Part I, Pl. 30, li. 6-8) said to have elapsed between Gulkishar (*i.e.*, from his death) and Nebuchadrezzar I (*i.e.*, to the beginning of his government as emperor of Babylonia). These 696 years were obtained by the scribe simply by adding the 576½ years ascribed to the Cassite dynasty on the larger chronological list (A) + the last 120 years (= 9 + 7 + 26 + 28 + 50) of the last five kings of the dynasty of *SHESH(URU)-AZAG(ÎL.A)ki* = 696½ years, the scribe omitting only the fraction of a year, to round off his sum. Cf. Hilprecht, *Assyriaca*, pp. 20ff.

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6. As already assumed by Hommel, Winckler, Niebuhr, Lindl, etc., the dynasties known from the chronological lists sometimes overlap each other. In referring my readers to the well-known literature on this subject, I state it as my own conviction, based upon acknowledged facts and new arguments, (*a*) that about the last 100 years of the first dynasty of Isin (for which compare my list below) are contemporaneous with the first 100 years of the Ḫammurabi dynasty (cf. p. 49, note 5, below), and that the dynasties of Erech (represented by Sin-gâshid, etc.) and Larsam (known from Nûr-Immer, etc.) must be placed in the same general period;[1] (*b*) that the dynasty of *SHESH(URU)-AZAG(Ḫ.A)*, which, according to all evidence, arose in the "Sea-Land," *mât tâmdim*, for a great part is contemporaneous with the Ḫammurabi dynasty (cf. pp. 55ff., below);[2] (*c*) that at least the first 80–100 years of the Cassite dynasty run parallel with the corresponding closing years of the preceding dynasties;[3] (*d*) that the first c. 35–40 years of the

[1] For the present cf. Winckler in Schrader's *K. A. T.*,[3] p. 19, and my remarks, pp. 55f., below.

[2] The mere fact that, according to our present knowledge, as early as the ninth year of Samsu-iluna the Cassites knocked at the gates of Babylonia (cf. King, "The Letters and Inscriptions of Ḫammurabi," Vol. III, p. 242), coupled with the other no less remarkable fact that until the present day not a single inscription can be assigned with absolute certainty to a king of the so-called second dynasty (cf., however, my additional remarks, pp. 55ff., below), renders it almost impossible to believe that the Cassite invaders should have conquered Babylonia only about 500 years after their first appearance in this country (cf. also Ranke, *B. E.*, Series A, Vol. VI, Part 1, p. 8), or that this second dynasty could have originated in Babylonia proper. In *Assyriaca*, pp. 20ff., especially pp. 24, 29ff., I pointed out that Gulkishar, "king of the Sea-Land" (*B. E.*, Series A, Vol. I, Part 1, Pl. 30, li. 6; *Gir* either to be read *Gul*, or to be explained in the same way as *Lugamar* alongside of *Lu-gamal* (Sayce in *P. B. S. A.*, Vol. XXVIII, p. 196), *irdud* (= *ishdud*) alongside of *ildud*, Ungnad, *Babyl.-Assyr. Gram.*, p. 10; *marlakat* alongside of *malhakat* (and *mashlakat*, Delitzsch, *Assyr. Gram.*, 2nd ed., p. 129), but in either case a proof for the Sumerian pronunciation of the king's name, possibly adopted after his destruction of the (*sharrût*) *kishshati*), and the Gulkishar of the second dynasty are identical. For it is impossible to assume that two persons with the same rare name (never occurring again in the Babyl. literature) should have been kings of two different countries at precisely the same time, namely 696 years before Nebuchadrezzar I, whose exact position in Babylonian history can now be ascertained from a new boundary stone from Nippur (cf. p. 11, note 1). If then the two Gulkishars are the same person, it necessarily follows that the *SHESH(URU)-AZAG* (*Ḫ.A*) of the chronological list must be either identical with *mât tâmdim* or have formed a part of it. Only the first sign seems to be certain (*SHESH*). The second sign is given as *AZAG* or *Ḫ.A* (both = *KU*). Is it possible that *SHESH-AZAG(Ḫ.A)* is an ideogram of the same meaning as *SHESH(-A)* = *Marratu* (cf. *K.* 246, Col. I, 37)? In this case, like the latter, it would be an ideogram for *Marratuki*, designating the Babylonian district adjoining the *mar Marratu* (cf. the map in Delitzsch, *Wo lag das Paradies?*), in other words the *mât tâmdim*. Cf. also Hommel in *P. S. B. A.*, November, 1893, p. 15. For a brief summary of the principal events connected with "the Sea-Land" in Babylonian-Assyrian history, cf. Weissbach, *Babylonische Miscellen*, p. 8. A city or town *âluBit-dSin-ma-gir* is mentioned in *P.* 96, li. 4 (= Peiser, *Urkunden aus der Zeit der dritten babylonischen Dynastie*, pp. 6 and 7). [While visiting London in October, 1906, I communicated my theory as to the origin of the second dynasty to King, who informed me that he had reached a similar conclusion with the help of new material to be published in his forthcoming work, "Chronicles concerning Early Babylonian Kings," being volumes II and III of his "Studies in Eastern History," to which I refer Assyriologists for a full discussion of an important question, upon which I can merely touch here.]

[3] The first Cassite ruler who was in complete control of Babylonia seems to have been (*Agum-*) *Kakrime* (on whom cf. p. 5, note 8, above), to judge from his titles and achievements. He probably occupied the seventh place in the list of Cassite rulers. Cf. especially his title *makîn ishîd kussî abishu* (Col. I, li. 28–29) and Winckler, *A. F.*, pp. 517ff.

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PA-SHE (*i.e.*, the second Isin) dynasty are contemporaneous with the last 35–40 years of the Cassite dynasty, and that Nebuchadrezzar I, the third or fourth king of this second dynasty of Isin, was the founder of the supremacy maintained by its members as emperors of Babylonia.[1]

7. According to my interpretation of Nabonidos' method, the dates assigned by him to certain periods of Babylonian history would have been about as follows: We begin our calculation with the first year of Nebuchadrezzar I as emperor of Babylonia (which not necessarily was the first year of his reign as king of Isin; on the contrary, strong reasons speak against it), *i.e.*, the first year after his overthrow and expulsion of the Cassite dynasty (the last year of Bêl-shum-iddina, last king of the Cassite dynasty, being the *shat rêsh sharrûti* of Nebuchadrezzar; for we know from the dated Cassite tablets that at this early period the year of accession to the throne was already distinguished from the following years of a king's reign, according to the well-known method prevailing in Neo-Babylonian times). At the same time we allow a reasonable time for the unknown periods of the dynasties of Erech and Larsam, which, if separately enumerated in Nabonidos' chronological list, must have covered at least c. 150 years. If only the dynasty of Larsam was given, an allowance of c. 100 years will be moderate. The first year of Nebuchadrezzar I as emperor of Babylonia may be given approximately as 1140 B.C.,[2] to which we must add about 10 to 15 years, when he was only king of Isin (= 1150–55 B.C.), + the 23 years of his predecessors known from the chronological list (= c. 1173–78 B.C.) + 576⅞ years of the Cassite dynasty (= c. 1750–1755 B.C., the 9 months counted as a full year) + 368 years of the second dynasty (= c. 2118–23

[1] Cf. *B. E.*, Series A, Vol. I, Part 1, pp. 41ff. Through a recent examination of a portion of the original tablet on which the chronological List A is inscribed, I have been convinced that the objections raised by Winckler and others against my placing Nebudadrezzar I at the head of the second dynasty of Isin (= *PA-SHE*) are justified. But while it is true that this king occupied only the third or fourth place among the members of his dynasty, it is likewise true that, as I always claimed, he was the real founder of his dynasty as to the throne of Babylonia. His predecessors were merely kings of Isin, at a time when the last Cassite kings were still in possession of Nippur, retaining a nominal supremacy over Babylonia, until their dynasty was overthrown by Nebuchadrezzar. In my previous writings I inferred this from the king's proud titles (cf. especially *shâlilu Kashshi*) and remarkable victories. This theory can now be proved beyond any doubt by the new boundary stone referred to on p. 43, note 2, above, where Nebuchadrezzar has the significant titles (Col. II, 23f.), *shar kishshati, mukîn ishid mâti*, illustrated by the words that Bêl (who had looked favorably upon him because of his care for the god's sanctuaries) "broke the weapon of his enemy and placed the scepter of his enemy in his own hand, that he might pasture (*ana rê'ût*) Shumer and Akkad, renew the sanctuaries of the city of dwellings (or mankind? *maḫâz dadmê* [= *tâdmê*, from *adâmu*?]) and regulate the tithes of Ekur and Nippur (*ana sadâr satuk Ekur u Nippur*), Col. I, 22–II, 5. This important document is dated in the sixteenth year of Nebuchadrezzar (Col. V, 26). The text will be published in *B. E.*, Series A, Vol. I, Part 3, while its transliteration and translation with commentary by my pupil Dr. W. J. Hincke will appear in *B. E.*, Series B, Vol. IV.

[2] Cf. Hilprecht, *B. E.*, Series A, Vol. I, Part 1, pp. 38 and 44, and Winckler, *A. F.*, p. 132 (Nebuchadrezzar I, c. 1151–33). Winckler's additional 10 years are assigned by me to Nebuchadrezzar as king of Isin before his accession to the Babylonian throne.

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B.C.) + 304 (resp. 305) years of the Ḫammurabi dynasty (= c. 2422(8) B.C.) + c. 100–150 years of the dynasties of Larsam and Erech (= c. 2552–2572(8) B.C.) + 225½ years of the first dynasty of Isin (cf. the new chronological fragment below = c. 2748–2798(2804) B.C.) + 117 years of the dynasty of Ur (cf. the new chronological fragment below = 2865–2915(21) B.C.). In other words, at a moderate estimate, we would obtain c. 2865 or 2915 B.C. as the beginning of the reign of Ur-Engur, c. 2655 or 2705 B.C. as that of Ur-^{d}*NIN-IB*, c. 2322 or 2371 as that of Ḫammurabi, c. 2123 B.C. for the first king of the 2nd dynasty, c. 1756 B.C. as the first year of the Cassite dynasty, *i.e.*, practically the chronology hitherto more or less adopted by Assyriologists, who generally reduced it by about 100 years, because it was unknown that the first dynasty of Isin ruled as long as 225 years, represented as it is by 16 kings, only half of whom were previously known to us. Considering the fact that, according to all evidence (cf. p. 40, above) when complete, the new chronological list published on Pl. 30 must have contained about 135 pre-Enguric rulers, and, furthermore, that the "*Babylonische Kleinstaaterei*" was a much more pronounced feature in the period preceding Ur-Engur than afterwards, I do not hesitate to assume that the c. 835–885 years required to fill out the gap between c. 3750 B.C. (Narâm-Sin's age according to Nabonidos) and c. 2865–2915 B.C. (Ur-Engur) could easily have been obtained on the part of Nabonidos by simply adding the reigns of the different rulers of the largely contemporaneous dynasties in successive order recorded between Narâm-Sin and Ur-Engur in his evidently better preserved chronological lists.

8. According to my own view of Babylonian chronology, these traditional high dates from Ur-Engur to Nebuchadrezzar I are impossible and must be reduced by about 3–400 and in some cases even 500 years. Accordingly, I assign c. 1140 B.C. to Nebuchadrezzar I as emperor of Babylonia and successor to Bêl-shum-iddina, last member of the Cassite dynasty (ceasing to reign c. 1141 B.C.); c. 1717 to Gandash, as ruler of the Cassite hordes, or c. 1625 to (Agum-) Kakrime, as probably the first Cassite emperor of Babylonia. According to our conception of the extent of the contemporaneous reigns of members of the so-called second and the Cassite dynasties with the first dynasty of Babylon, the dates to be assigned to Ḫammurabi must vary considerably. At the lowest estimate he ruled c. 1830 B.C., at the highest he cannot be placed beyond 2000 B.C. Ur-^{d}*NIN-IB*, accordingly, would have ruled some time between 2300 and 2000 B.C., Ur-Engur some time between 2500 and 2200 B.C., Sargon I between 3000 and 2700 B.C.

I lay stress only upon the principle set forth above. The dates themselves must be understood as mere possibilities. They cannot be fixed more accurately without a much better knowledge of Babylonian history than, I frankly confess, we have at present.

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After this brief digression from our principal subject, we return to an examination of the new chronological fragment.

The Reverse of this important fragment reads as follows:

1.	*Urum^{ki}-ma Ur-^{d}Engur-ra lugal-âm*		*mu*	18	*in-a[g]*
2.	*Dun-gi*	*dumu Ur-^{d}Engur-ge*	*mu*	58	*in-ag*
3.	*Bûr-^{d}Sin-na*	*dumu Dun-gi-ge*	*mu*	9	*in-ag*
4.	*Gimil-^{d}Sin*	*dumu Bûr-^{d}Sin-na-ge*	*mu*	7	*in-ag*
5.	*I-bi-^{d}Sin*	*dumu Gimil-^{d}Sin-na-ge*	*mu*	25	*in-ag*
6.	5 *lugal-e-ne*		[*mu*]	117	*in-ag-esh*
7.	*Urum^{ki} bal(?)-bi ba-bal nam-lugal-bi Ì-si-in^{ki} shû-ba-ti[i]*				
8.	*Ì-si-in^{ki}-ma Ish-bi-^{d}Ûr-ra lugal-âm*		*mu*	32	*in-ag*
9.	*Gimil-ili-shû*	*dumu Ish-bi-^{d}Ur-ra-ge*	*mu*	10	*in-ag*
10.	*I-din-^{d}Da-gan*	*dumu Gimil-ili-shû-ge*	*mu*	21	*in-ag*
11.	*Ish-me-^{d}Da-gan*	*dumu I-din-^{d}Da-gan-ge*	*mu*	20	*in-a[g]*
12.	*I[i]-b[i]-it-Ish-tar*	*dumu Ish-me-^{d}Da-gan-ge*	*mu*	11	*in-a[g]*
13.	*Ur-[^{d}XIX-I]B*		*mu*	28	*in-a[g]*
14.	[*Bur-^{d}Sî*]*n*	*dumu Ur-^{d}XIX-IB-ge*	*mu*	21	*in-a[g]*
15.	*I[-te-ir-K]A-[sh]â*	*dumu Bur-^{d}Sin*	*mu*	5	*i[n]-a[g]*
16.	..-..-..-..-..	*shesh*	*mu*	7	*in-a[g]*
17.	^{d}*Sin*(?)-..-..-..		*itu*	6	*i[n-ag]*
18.	^{d}*Bê*[*l*]-*ba-n*[*i*]		*mu*	24	*i[n-ag]*
19.	*Za-me*(?)-..-*e*(?)		*mu*	3	*i[n-ag]*
20.	..-..-..		*mu*	5	*i[n-ag]*
21.	^{d}*Ea*(DISH?)-..-..		*mu*	4	*i[n-ag]*
22.	^{d}*Sin-ma-*[*gi*]*r*		*mu*	11	*i[n-ag]*
23.	*Da-m*[*i*]-*iq-ili-shû*	*dumu ^{d}Sin-ma-gir*	*mu*	23	*i[n-ag]*
24.	[16 *lugal-e-n*]*e*		[*m*]*u*	225	*itu* 6 *in-a[g-esh]*

TRANSLATION:

1.	**Ur :** Ur-Engur became king,		ruled	18 years.
2.	Dungi,	son of Ur-Engur,	ruled	58 years.
3.	Bûr-Sin,	son of Dungi,	ruled	9 years.
4.	Gimil-Sin,	son of Bûr-Sin,	ruled	7 years.
5.	Ibi-Sin,	son of Gimil-Sin,	ruled	25 years.
6.	5 kings,		ruled	117 years.
7.	Ur, its reign(?) was overthrown, Isin took its kingdom.			
8.	**Isin :** Ishbi-Ura became king,		ruled	32 years.

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9.	Gimil-ilishu,	son of Ishbi-Ura,	ruled 10 years.
10.	Idin-Dagân,	son of Gimil-ilishu,	ruled 21 years.
11.	Ishme-Dagân,	son of Idin-Dagân,	ruled 20 years.
12.	Libit-Ishtar,	son of Ishme-Dagân,	ruled 11 years.
13.	Ur-Ninib,		ruled 28 years.
14.	Bûr-Sin,	son of Ur-Ninib,	ruled 21 years.
15.	Itêr-KA-sha,	son of Bûr-Sin,	ruled 5 years.
16.	?	brother (of the preceding),	ruled 7 years.
17.	Sin(?)-..-..,		ruled 6 months.
18.	Bêl-bâni,		ruled 24 years.
19.	Za-me(?)-..-e(?),		ruled 3 years.
20.	?		ruled 5 years.
21.	Ea(?)-..-..		ruled 4 years.
22.	Sin-mâgir,		ruled 11 years.
23.	Dâmiq-ilishu,	son of Sin-mâgir,	ruled 23 years.
24.	16 kings,		ruled 225 years 6 months.

The Sumerian does not offer any difficulty. Most of the lines close with *in-ag*, "he ruled," two lines (6 and 24) with *in-ag-esh*, "they ruled," phrases well known from Chronicle *S* (Winckler, *Untersuchungen*, p. 153). For *ag* = *bêlu*, "to rule," cf. V *R.* 13, 50a. All the names preceded by *dumu*, "son of," have the genitive sign *ge*, except *Bur-^{d}Sin* (li. 15) and ^{d}*Sin-mâgir* (li. 23). Observe the *Verlängerungssilbe* "*ra*" after *Ur-^{d}Engur* (li. 1, but, strangely enough, omitted in li. 2 before *ge*), which proves that the royal name ended in *r*. For the reading "*engur*" cf. Thureau-Dangin, in *Revue d'Assyriologie*, Vol. V, p. 70, note 2, and *Les Inscriptions de Sumer et d'Akkad*, p. 263, note 9. No less unusual is the *Verlängerungssilbe* "*na*" after ^{d}*Sin* in lines 3–5. This use of the *Verlängerungssilben* "*ra*" and "*na*" (especially the latter, assuring the Semitic reading of ^{d}*EN-ZU* = ^{d}*Sin*), in connection with the omission of the *Verlängerungssilben* "*ma*" after *Urum^{ki}* and "*na*" after *Isin^{ki}* (li. 7)—generally omitted only in the Semitic inscriptions of the kings of Ur and Isin and of their period, while the Sumerian texts have them—proves that the Sumerian was written by a Semitic scribe, which for other reasons we anyhow would have assumed.

Lugal-A-AN (lines 1 and 8) = *lugal-âm* (cf. *Z. K.*, Vol. I, p. 300), "he was" or "he became king" (cf. *dingir-ra-âm*, "he was a god," Prince, "Materials for a Sumerian Lexicon," p. 11), while *lugal-e*, often occurring in the dates of the 1. dynasty of Babylon and elsewhere, means simply "the king" (not "he became king" (Lindl and King) nor "king of E," *i.e.*, Babylon, as I formerly translated), cf. Delitzsch in *B. A.*,

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Vol. IV, p. 404, Daiches, *A.R.*, p. 71, Ranke, *B.E.*, Series A, VI, 1, p. 11, note 1. In li. 6 by mistake the scribe omitted *mu*, distinct traces of which are preserved in li. 24. But the omission of the sign *ZU* after ^{d}EN (cf. Pl. XV) in the name of *Gimil-^{d}Sin* (li. 5) is due to an error on the part of the editor. *Urum^{ki}-ma* (li. 1) and *Isin^{ki}-na* (li. 8), marking the beginning of a new dynasty, are placed emphatically at the beginning of the line, without any grammatical connection with the words following. The end of li. 7 is very probably to be read *shû-ba-ti*, "it took, seized," a phrase well known from the business records (= "he received" = *imḫur* or *maḫir*) of the third millennium. The writing *I-**bi**-^{d}Sin* (li. 5) definitely settles the reading of the name of the last king of the dynasty of Ur, generally written *I-NE-^{d}Sin*, in favor of Delitzsch's proposition = *I-bi-^{d}Sin* (in *B. A.*, Vol. II, p. 626), accepted by Ranke, *Dissertation*, p. 28, *B. E.*, Series D, Vol. III, p. 229, note 5, Thureau-Dangin, *Recueil de Tablettes Chaldéennes*, p. I, note 2, and *Les Inscriptions de Sumer et d'Akkad*, p. 289, note 6, and others—a transliteration which Delitzsch himself, however, lately abandoned again in his *Babylonische und assyrische Herrscherlisten*.

For the identity of the names *Bûr*(written ideographically, cf. Brünnow, "A Classified List," No. 9068)-^{d}*Sin* and *Bur*(written syllabically, cf. Brünnow, *l.c.*, No. 6971)-*Sin*, cf. Delitzsch, in *B. A.*, Vol. II, pp. 622ff. The name of King *Li-bi-it*-Ísh(= *U*)-tár (= *DAR*, cf. Thureau-Dangin, *Les Inscriptions de Sumer et d'Akkad*, p. 290), known already from his two cone inscriptions (King, "Cuneiform Texts," Vol. XXI, Pls. 18 and 19), is written *Li-bit-^{d}Ish-tar* in *K* 2973 (King, "Cuneiform Texts," Vol. XIII, Pl. 45, Obv., li. 4). I am inclined to regard the name *Dun-qi* as an abbreviated Semitic name written syllabically = *Damqi*. The verb *damâqu* is commonly used in the earlier Semitic proper names, cf. li. 23 of our chronological list and the names *Dâmiq-Marduk*, *Damqi-Bêl*, *Damqija*, *Damqi-ilishu*, *Damqi-Sin*, *Ilu-dâmiq*, *Ina-in-bêl-ilê-dâmiq*, *Ea-mudamiq*, and especially the two instructive feminine names, *Du-mu-uq-be-el-tim* and *Ili-dum(TUM)-qi*[1] (which, however, can also be read *Ili-ib-qi*; for *ibiq* and *ib-ku* likewise are common elements in early proper names).

The preserved portion of the Reverse is divided into two sections (*a*) lines 1–6: the kings of the dynasty of Ur, beginning with: "**Ur:** Ur-Engur became king, he ruled 18 years" (li. 1), and closing with: "5 kings ruled 117 years" (li. 6). (*b*) lines 7–24: the kings of the dynasty of Isin, beginning with: "Ur, its reign(?) ceased" (literally "broke," "tore," "perished," "was destroyed," or the like), "Isin seized its kinghood" (li. 7). "**Isin:** Ishbi-Ura became king, he ruled 32 years" (li. 8), and closing with: "16 kings ruled 225 years."

Mutilated as some of the names at the lower end of the fragment are, the number

[1] For all these names cf. Ranke, *B. E.*, Series D, Vol. III

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of rulers composing the two dynasties and their respective reigns are absolutely certain. Besides, two of the royal names (lines 15 and 18) can be restored with great probability from several unpublished Nippur tablets containing the names of two otherwise unknown kings, who for various reasons must have been members of the dynasty of Isin, These two royal names are *ᵈI-te-ir-KA-shá*, and *ᵈBél-ba-ni*. The last mentioned king. already referred to by Scheil (in *Recueil*, Vol. XIX, Note XXVII, Reprint, p. 23), who found him on *M. I. O.*, Ni. 353, is known to me from three other dated Nippur tablets, among them *C. B. M.* 11,564[1] and *M. I. O.*, Ni. 1898. King *ᵈI-te-ir-KA-shá* (on *KA-shá*, cf. Ranke, *B. E.*, Series D, Vol. III, pp. 235f., note 9) appears on three dated tablets. The one—the interior of a case-tablet, covered repeatedly with the seal impression of a certain *Awil-ᵈNIN-IB*, son of *KA*(= *Awât-* or *Bî-*)-*ᵈNIN-IB*, prominently mentioned in the transaction—is dated "*ᵃʳʰᵘAB-UD-DU* (*i.e.*, *Ṭebētum*) *mu ᵈI-te-ir-KA-shá lugal-e*." The second is a fragment closing with "*ᵃʳʰᵘAPIN-GAB-A* (*i.e.*, *Araḫ-samna*) *mu ᵈI-te-ir-KA-shá lugal*," followed by three not very distinct lines (continuing the date and mentioning *Bél* and *Nippur*). The third is among the unclassified tablets which I examined only once very hastily. There occurs another king by the name of *AM-SHU*(?)-*ili-b*(*m*)*a-AN* on the unpublished tablet *C. B. M.* 11,013, who, however, cannot belong to this dynasty (cf. p. 55, note 4). In l. 16 of the new chronological list we find the sign *SHESH* after the traces of *an*(?), which I do not regard as part of the name, but as an apposition to X, designating the latter as the brother of the preceding King *ᵈI-te-ir-KA-shá*, and, therefore, as a second son of Bûr-Sin of Isin. Cf. the same sign *SHESH* placed after Shushi of the dynasty of *SHESH*(*URU*)-*KUᵏⁱ* (on the larger list of kings, known as A), who thereby is designated as the brother[2] of *Ishkibal*.

With the exception of one contract tablet excavated by Scheil at Abû Habba[3] and dated "in the year after that in which King [*Dâ*]*miq-ilishu* built the wall of Isin," documents dated according to kings of the dynasty of Isin, to the best of my knowledge, have thus far been discovered only at Nuffar. Besides the tablets just treated, I have seen one dated "in the year when *ᵈUr-ᵈNINIB*[4] . . " (rest mutilated, *M. I. O.*, Ni. 1912), three in the reign of *ᵈDa-mi-iq-ili-shá lugal* (cf. *C. B. M.* 11,662),[5] and one or two in the reign

[1] The name of the month *ᵃʳʰᵘKIN-ᵈNinni* forming part of its date. The ideograms of the different months found on the tablets dated in the reigns of kings of Isin correspond with those known from the tablets of the period of Ḫammurabi. Cf. Pl. 30, No. 46. From documents dated in the reigns of kings of the dynasty of Isin I have gathered the following ideographic writings: *ᵃʳʰᵘGUD-SI-DI* (=*Airu*), *ᵃʳʰᵘNE-NE-GAR* (=*Abu*), *ᵃʳʰᵘKIN-ᵈNinni* (=*Elálu*). *ᵃʳʰᵘ ⁱˢᵘAPIN-GAB-A* (=*Araḫ-samna*), *ᵃʳʰᵘGAN-GAN-UD-DU* (=*Kisilīru*), *ᵃʳʰᵘAB-UD-DU* (=*Ṭebetu*).

[2] Thus correctly interpreted by Lehmann, Delitzsch and others.

[3] Cf. *Recueil*, Vol. XXIII, pp. 93f., and *Sippar*, p. 140.

[4] Cf. Hilprecht, *B. E.*, Series D, Vol. I, p. 381, note 4.

[5] Dated "Month of *ᵃʳʰᵘ ⁱˢᵘAPIN-GAB-A* (=*Araḫsamna*), in the year when Dâmiq-ilishu, the king, [built] the

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of *ᵈBûr-ᵈSîn*.[1] Altogether, therefore, five kings of this dynasty are represented by dated tablets. I have no doubt a good number of the insufficiently dated Nippur documents (*i.e.*, dated after an important event but omitting the name of the ruler) will turn out to belong to the same period. *Dâmiq-ilishu* is also known from two fragmentary terra-cotta cones with identical inscriptions, excavated at Nuffar in 1893 and 1895 respectively,[2] and probably also from Chronicle S. (large fragm., li. 3) and *K.* 3992, li. 10 (cf. Winckler, *A. F.*, pp. 515ff.). *Sîn-mâgir* is represented by two fragments of a terra-cotta cone (of the same general type as those of Dâmiq-ilishu from Nippur) excavated by the German expedition in the temple *E-PA-ṬU-TI-LA* of Babylon and published by Weissbach in his *Babylonische Miscellen*, Pl. 1, No. 1 and p. 1. A much mutilated inscription of ᵈIdin-Dagân[3] of Isin was excavated by Scheil at Abû Habba and published in *Recueil*, Vol. XVI (1894), pp. 187ff. (cf. also *Sippar*, p. 131).[4] *ᵈIsh-bi-Ûr-ra*[5] *lugal Ì-si-in-*[*ki*]*na* is mentioned in li. 9 of another mutilated text published in IV *R.*² 35, No. 7.[6] His son *Gimil-ilishu*[7] is not yet known outside of the chronological list here published. *ᵈIshme-*

temple *E-dibur-kalama* of Shamash" (rest broken off). Cf. also the next footnote. The temple referred to in this date is evidently identical with the temple of the same name in Babylon restored by Nebuchadrezzar II, *East India House Inscr.*, Col. IV, 29–34. It then would follow that at this time Dâmiq-ilishu was in possession of Babylon, like his father Sîn-mâgir, whose fragmentary building inscription was discovered by the German expedition in the ruins of the temple *E-PA-ṬU-TI-LA* (cf. Weissbach, *Babylonische Miscellen*, Pl. 1 and p. 1). If my theory concerning the contemporaneous reigns of rulers of the dynasty of Isin and the first dynasty of Babylon is correct, the 17th year of Sîn-mubalit, when Isin was conquered, would be identical with the 23d year of Dâmiq-ilishu of Isin, and the second year of Apil-Sîn identical with the first year of Sîn-mâgir. It is a remarkable fact that in the list of dates of the first dynasty of Babylon published by King ("The Letters and Inscriptions of Hammurabi," Vol. III, pp. 213ff.) important building operations are reported to have been in progress in Babylon during the rule of Apil-Sîn, whom I regard as the vassal of the last two kings of Isin. The first year of Sumu-abu would have coincided with about the sixth year of Bûr-Sîn II of Isin.

[1] I find in my notebook the following entry: *arḫu KIN-ᵈ*[*Ninni*] *mu ᵈBûr-ᵈSîn lugal-e bad Mi-gir-ᵈNIN-IN-SI-NA mu-ru*, "in the month of Elûlu, when King Bûr-Sîn built the wall *Migir-ᵈNIN IN-SI-NA*"—perhaps the same wall afterwards called *Dâmiq-ilishu-migir-ᵈNIN-IB* (cf. Hilprecht, *B. E.*, Series D, Vol. I, p. 414) and referred to in two dates of this king, namely *arḫu GUD-SI-DI mu ᵈDa-mi-iq ili-shû bad gal Ì-si-inki-na mu-un-rú-a*, "in the month of Airu, when Dâmiq-ilishu built the great wall of Isin," and *arḫu NE-NE-GAR mu ush-sa ᵈDa-mi-iq ili-shû lugal-e bad gal Ì-si-inki-na mu-rú*, "the year after that in which D. built the great wall of Isin."

[2] Cf. Hilprecht, *B. E.*, Series D, Vol. I, p. 418. The complete text will be found in *B. E.*, Series A, Vol. I, Part 3.

[3] Another person of the same name is mentioned by Ranke, *B. E.*, Series D, Vol. III, p. 95.

[4] Already classified with the kings of Isin by Radau ("Early Babylonian History," pp. 231ff.) and the present writer (*B. E.*, Series D, Vol. I, p. 382, note 2). I wrote (*l.c.*): "It (*i.e.*, the dynasty of Isin) comprised at least seven kings, Ishbigirra, Ur-Ninib, Libit-Ishtar, Bûr-Sîn II, Dâmiq-ilishu, Idin-Dagân and Ishme-Dagân," regarding it even then as possible that *Bel-bâni* and *Rim-Anum* also belonged to the same dynasty.

[5] Scheil (in *Recueil*, Vol. XIX, p. 48), protesting against the reading *Ish-bi*, substitutes *Ish-gish*, which however is impossible (cf. Radau, *l.c.*, p. 229). For the reading of the second element *Ûr-ra*, generally rendered *Gir-ra*, from which the former is a later development, cf. Renke, *B. E.*, Series D, Vol. III, p. 208 (compared with Pinches in "Babylonian and Oriental Record," Vol. I, p. 208; Jensen in *Z. A.*, Vol. III, p. 207, and *Kosmologie*, p. 145, note 1).

[6] Cf. Winckler in Schrader's *K. B.*, Vol. III, p. 86.

[7] This name, however, is frequently found on documents of that general period, cf. Ranke, *B. E.*, Series D, Vol. III, p. 84.

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^{d}Dagân, ^{d}Ur-^{d}NIN-IB and ^{d}Bûr-^{d}Sin left numerous bricks inscribed with their names and titles at Nuffar.[1] For the inscriptions of Libit-Ishtar cf. p. 48, above.

The result of our examination is that ten of the sixteen kings forming the dynasty of Isin are already familiar to us from their own inscriptions or from documents dated in their reigns. An eleventh name is obtained from li. 9 of the new chronological list (Gimil-ilishu). It is very probable that the remaining five members, whose identification is facilitated by the traces of cuneiform characters left in li. 16–17, 19–21, will be found on some of the unclassified tablets from Nuffar. Hommel recently called my attention to a king *Nûr-^{d}Dagân*, mentioned in "Cuneiform Texts," as possibly one of these missing kings. ^{d}*Sin-i-ri-ba-am* (Scheil in *Recueil*, Vol. XXIV, *Note* LXII, and in *O. L. Z.*, 1905, Col. 350) may have been another, unless the one or both belonged to the Larsa dynasty. As to the so-called "*Usurpatoren*" of the first dynasty cf. pp. 56ff.

We observe that apart from Bêl-bâni and Sin-mâgir, whose names begin with a deity and, therefore, with the sign for "god," the names of all the known kings of this dynasty are determined by *ilu* in their own inscriptions and in those written during their government, while they naturally appear without any determinative in the chronological list. We have known for some time that the rise of the dynasty of Isin was closely connected with the possession of the great sanctuary at Nippur; for its members place the title *sib nig-nam-il Nibur^{ki}*, or *sib shag Nibur^{ki} dug-dug*, or *sib BUR-na-Nibur^{ki}*, or *sib ú-a . . . ^{d}Enlila*, or *ú-a Nibur^{ki}*, by which they designate themselves as the sublime or pious shepherds who have the interest of the temple of Bêl at heart, before all their other titles. And we also know that the significant title: *lugal an-ub-da tab-tab-ba* = *shar kibrat arba'im*, "king of the four quarters of the world," was bestowed by the high-priest of Bêl at Nippur (cf. my remarks in *B. E.*, Series A, Vol. I, Part 2, pp. 53ff., and Series D, Vol. I, pp. 481f., where the wall of Nippur is called by King Samsu-iluna: *Markas-mâtâtim*, "the link of the lands," *i.e.*, "the wall which unites all the lands," in other words, "the centre of the world"). These kings then evidently enjoyed divine honors, like Sargon I, Narâm-Sin, Dungi, Bûr-Sin I, Gimil-Sin, Ibi-Sin before them, because by reason of this title they were the human representatives of Bêl on earth. The custom of deification seems to have sprung up with Sargon I, been revived by Dungi[2] and his

[1] Cf. Hilprecht, *B. E.*, Series A, Vol. I, Nos. 18 and 19, and pp. 27f. The brick legends of Ishme-Dagân, who also left fragments of a large inscribed slab in diorite (cf. *B. E.*, Series J, Vol. I, No. 17), will be published in Vol. I, Part 3. Inscribed bricks of Ishme-Dagân were also discovered at Muqayyar, cf. I R.^{2}, No. V, 1 and 2, republished by King in "Cuneiform Texts," Part XXI, Pls. 20 and 21. A seal of Bûr-Sin (*Berlin*, V. A. 2720) was published by Lehmann in *B. A.*, Vol. II, pp. 589ff. Cf. the translations of the inscriptions of members of the dynasty of Isin by Winckler in Schrader's *K. B.*, Vol. III, pp. 84ff.; Radau, "Early Babylonian History," pp. 228ff.; and Thureau-Dangin, *Les Inscriptions de Sumer et d'Akkad*, pp. 290ff.

[2] Cf. Thureau-Dangin in *Recueil*, Vol. XIX, pp. 185f., and *Revue d'Assyriologie*, Vol. III, pp. 71ff.

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successors (including Nûr-Immer and Rîm-Sin), and after a lapse of many centuries adopted again by Kurigalzu, Nazi-Maruttash, Kadashman-Turgu, Kadashman-Bêl,[1] Kudur-Bêl and Shagarakti-Shuriash, who made Nippur their stronghold[2] and evidently gained the support of its priesthood by endeavoring to restore the former glory of Ekur and by stepping forward as the champions of the sacred rights of "the father of the gods," who in return for their loyalty and devotion raised them to the rank of gods while still living.[3] The neglect of the Nippur cult, *i.e.*, the diminution of the temple income, seems to have commenced with Bitiliâshu. On the new boundary stone of Nebuchadrezzar I. from Nippur (cf. p. 44, note 1, above) this is given as the cause of the anger of Bêl, resulting in the downfall of the Cassite dynasty.

On the basis of the two Nippur lists containing dates of Dungi, Bûr-Sin and Gimil-

[1] As previously stated by me (*Z. A.*, Vol. VII, pp. 308f.), Cassite kings never have any determinative before their names and comparatively rarely any title after their names in the numerous votive inscriptions preserved to us. The determinative *ilu*, on the other hand, while never occurring in any dated document of Burna-Buriash and Bitiliâshu, is often placed before the names of the six Cassite kings mentioned above on the numerous tablets dated in their reigns. For the published material cf. Hilprecht in *Z. A.*, Vols. VII, pp. 308ff., and VIII, pp. 386f.; Peiser, *Urkunden aus der Zeit der ersten babylonischen Dynastie*, and Clay, *B. E.*, Series A, Vol. XIV (by an oversight Clay forgot to indicate the determinative *ilu* before the name of Kadashman-Turgu in his useful "Concordance of Proper Names." It appears, however, in Nos. 99: 6, 106a: 7, 106b: 5, 106c: 8, 107: 7, 108a: 5, and on a number of unpublished tablets). After Clay, on the basis of certain proper names, made it very probable (*l.c.*, pp. 4f.) that the name of Kadashman-Turgu's successor, whom I read Kadashman-Buriash, was Kadashman-Bêl (formerly regarded by me as identical with Kadashman-Turgu), the names of the seven Cassite rulers preceding Bitiliâshu in the larger List A (which on October 13, 1906, King and I examined anew in the British Museum, in the light of the fresh material furnished by the Nippur tablets, presenting the results of our combined collation in this note) can be restored as follows (with due consideration of the fact that the Cassite votive objects and dated documents form one group, which cannot be dismembered to fit theories): **Burna-Buriash** (latest Nippur tablet dated in his 25th year), **Kurigalzu** (his son, but possibly not his immediate successor; doubtless 25 years according to the traces preserved in List A, beginning of Col. II, latest Nippur document dated in his 23d year), **Nazi-Maruttash** (his son, 26 years according to List A, latest Nippur document dated in his 24th year), **Kadashman-Turgu** (his son, 17 years according to List A, latest Nippur document dated in his 16th year), **Kadashman-Bêl** (beginning of his name (*Ka-di(a)sh-* . . .) and traces of the number of years of his reign preserved in List A (in all probability 11 or 12; or if we do not allow the "ten," only 1 or 2), latest Nippur document dated in his 6th year), **Kudur-Bêl** (possibly his son, formerly read *Is-am-me-* . . . . in List A, where the partly effaced number of his years seems to have been a 6—a discrepancy between List A and the Nippur documents—latest Nippur document dated in his 9th year), **Shagarakti-Shuriash** (second(?) son of Kadashman-Bêl (cf. *B. E.*, Series A, Vol. I, No. 68, Col. I, lines 5 and 14–15), 13 years according to List A, latest Nippur document dated in his 12th year (cf. *B. E.*, Series A, Vol. XIV, No. 138, li. 2; the number 22 given by Clay, *l.c.*, pp. 3 and 72, is a mistake, for No. 139 clearly offers *shattu* 2^{kam})), **Bitiliâshu** (his son, 8 years according to List A, latest Nippur document dated in his 6th year). Cf. my first tentative list in *B. E.*, Series A, Vol. I, Part I, pp. 37f.

[2] Cf. *B. E.*, Series A, Vol. I, pp. 30f. More than 18,000 tablets and fragments dated in the reigns of Cassite kings have been excavated at Nuffar.

[3] The deification of living rulers, indicated by the determinative *ilu* placed before their names, as stated above, seems confined to the persons quoted. The more natural deification of dead persons is known from several other examples, cf. *e.g.*, Gudea, Sa(u)mu-abu, Hammurabi (cf. also King, "Letters," Vol. III, note), Samsu-iluna, Zabium, etc. Cf. Radau, "Early Babylonian History," pp. 307ff., Ranke, *B. E.*, Series D, Vol. III, p. 212, and others.

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Sin in chronological order,[1] and certain additional material gathered by several Assyriologists from dated tablets, seal impressions and other cuneiform texts, Thureau-Dangin had previously established the order of succession of the five kings of Ur, at the same time stating that Ur-Engur ruled at least four, Dungi at least forty-six, and Ibi-Sin at least three years, while Bûr-Sin and Gimil-Sin must have ruled nine years each.[2] With the exception of the last mentioned king, the French Assyriologist was correct. But the nine years ascribed by him to Gimil-Sin are evidently due to a mistake somewhere (perhaps two of the years of this king's reign were known by two different dates, as *e.g.*, several years of Dungi[3]), for the list of dates edited by me in *B. E.*, Series A, Vol. I, No. 127 (in accordance with Thureau-Dangin's own calculations, *Les inscriptions de Sumer et d'Akkad*, pp. 336f.), assigns only seven years to Gimil-Sin, in entire accord with the new chronological list discussed above. The unclassified dates given by Scheil, *Recueil*, Vol. XIX, pp. 54ff., and Thureau-Dangin, *l.c.*, pp. 336ff., as we may now safely assume, belong to Ur-Engur, Dungi, Ibi-Sin of Ur, and perhaps also to kings of Isin and Larsa.

The information conveyed by the new chronological tablet is of extraordinary importance for our better understanding of a very obscure chapter of Babylonian history, and surely we are grateful for what we have received. But at the same time one cannot help wishing that at least one more line was preserved on the fragment to serve as a first guide through the period which separates the reign of the last king of Isin from the time of Hammurabi. Considering all the evidence before us, I must adhere to my previously expressed conviction (*B. E.*, Series D, Vol. I, p. 382), that the dynasty of Isin was supplanted by the dynasty of Larsa. For not only are the tablets dated in the reign of Rîm-Sin found practically in the same stratum at Nippur, but the few remains of cuneiform signs left in li. 25 of the new chronological list seem to favor this view. For assuming that li. 25 was phrased as li. 7—which, however, is nothing but a mere hypothesis—the traces under "*6 in-ag*" of li. 24 would contain part of the name of the city which succeeded Isin, *i.e.*, *UD* (part of the head of the perpendicular wedge of the sign preserved) + *UNU* (the two upper horizontal wedges preserved) + *KI* (two horizontal wedges preserved?) = Larsa. Disregarding the trace of the first sign (which however cannot be the remains of *bi*), we obtain the group *UNU-KI* = Uruk, which of course would fit another theory, according to which the dynasty of Erech, known to us from the names of Sin-gâshid and Sin-gâmil, supplanted the dynasty of Isin. But to

[1] Cf. Hilprecht, *B. E.*, Series A, Vol. I, Nos. 125 and 127.

[2] Cf. Thureau-Dangin in *Revue Sémitique*, 1897, pp. 72ff.; *O. L. Z.*, 1898, pp. 161ff.; *Z. A.*, pp. 406ff., and *Revue d'Assyriologie*, Vols. III, pp. 141ff., V. p. 77.

[3] Or several years dated according to events occurring during the period of the first dynasty of Babylon. Cf. Lindl in *B. A.*, Vol. IV, p. 363, lines 31ff., and King, "The Letters and Inscriptions of Hammurabi," Vol. III, pp. LVII, and 220ff.

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judge from their titles in their own inscriptions ("king of Uruk, king of Amnanum") and from the utter absence of their inscriptions at Nippur, these kings of Erech (unless = *SHESH(URU)-KU*) did not play an important political rôle in the history of Babylonia.

In *B. E.*, Series D, Vol. I, pp. 378ff. and 512ff., I had reached the conclusion that the breaking and scattering of so many vases, statues, slabs, etc., in the temple court of Nippur (prior to Ur-^{d}*NIN-IB*'s accession to the throne), and of thousands of literary documents in the Temple Library and School to the south of it, "not only indicates a period of great political disturbance in Babylonia but points unmistakably to a foreign invasion," which I called the first Elamitic invasion, occurring about 125 years before the second, from which Hammurabi finally freed Babylonia. The question arises whether or not these two invasions are only two known phases of that great political movement and migration of nations taking place in Western Asia at that period and first felt in Babylonia as an invasion by the Elamites,[1] who only gradually were able to conquer the fertile plain, perhaps at one time and in one district victorious, while at another time and in another province repulsed by a Babylonian prince or general, who in consequence of his temporary success acquired a certain influence for himself and his city. At any rate a period of great political unrest is also reflected in the second half of the new chronological list.

After the family of Ishbi-Ura, founder of the dynasty of Isin, had occupied the throne of Babylonia for 94 years or less, Ur-^{d}*NIN-IB*, "the son of a nobody" (to quote a Neo-Babylonian phrase), usurped the throne. About the same time we find Enanatum, another son of Ishme-Dagân, and therefore the legitimate successor of Libit-Ishtar, his brother, as high-priest in the temple of Sin at Ur,[2] which then stood under the control of a certain Gungunu, "king of Ur," who, however, in his own inscription calls himself "king of Larsa, king of Shumer and Akkad." Considered in the light of the devastation of the temple of Bêl referred to above, the historical situation seems to have been this: Towards the end of Libit-Ishtar's government a foreign army had invaded Babylonia, succeeding even in conquering Nippur, desecrating and pillaging its famous sanctuary and overthrowing the old line of the dynasty of Isin. Ishme-Dagân's second son, unless invested by his own father with the high office he held at Ur, sought refuge with Gungunu, a Southern prince, who in the general turmoil had established a city kingdom in Larsa[3] and Ur, assuming even the proud title "king of Shumer and Akkad." But

[1] Cf. already Winckler, *Untersuchungen zur altbabylonischen Geschichte*, pp. 37f.; *Geschichte Babyloniens und Assyriens*, p. 48, etc.

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[2] *En-sal-NUNUZ-ZI* ^{d}*Nannar*, *en* ^{d}*Nannar*, thus called in two inscriptions from Muqayyar (cf. Thureau-Dangin, *Les Inscriptions de Sumer et d'Akkad*, pp. 294f.), the one inscribed on bricks from the temple of Sin at Ur, which by their very existence testify to the high position Enanatum occupied there.

Gungunu's influence in Babylonia did not last very long. Ur-^{d}*NIN-IB* of Isin restored order in the country evidently by repulsing the foreigners and winning the "kingdom of the four quarters of the world" for himself and his descendants. After about half a century a new disaster befell his dynasty. No less than six usurpers ascended the throne within the 36 or 37 years following the death of Bûr-Sin's unknown second son. It is safe to assert that with the exception of Bêl-bâni, who ruled 24 years and was in possession of Nippur, they had enough to do at Isin to hold and strengthen their position.

We may take it for granted that some of the old renowned centres, like Ur, Erech, Larsa and Sippar, profited from the political weakness manifested by these nominal Babylonian rulers of the dynasty of Isin. For various reasons[1] it seems to me almost certain that we have to place Sumu-ilu, "king of Ur,"[2] the unknown successors of king Gungunu of Ur and Larsa referred to above (and including Nûr-Immer [generally read Nûr-Adad] Sin-iddinam,[3] etc., and possibly Rîm-Anum, unless he belonged to the dynasty of Erech),[4] Sin-gâshid and Sin-gâmil, "kings of

[1] Cf. pp. 49f., note 5, and p. 53. Not my least reason is the fact that the form and color of the dated clay tablets of the dynasty of Isin, Larsa and Babylon, the stratum in which they are found, the writing, phraseology and technical terms and proper names of their inscriptions, the names of the months, etc., are practically the same. The tablets resemble each other so much that without a thorough knowledge of their contents they cannot be distinguished from each other. The overthrow of Isin in the seventeenth year of Sin-mubalit (=the last year of Dâmiq-ilishu) seems to have been accomplished by the united forces of this king and *Rîm-Sin*, whom we find in possession of Nippur, making the fall of Isin the beginning of a new era (tablets of his government dated even as high as the "thirtieth year after the fall of Isin" have been discovered at Nippur). We are therefore justified in regarding Rîm-Sin as the immediate successor of Dâmiq-ilishu of Isin.

[2] Known from a votive dog in steatite offered to Nin-Isin^{ki}, *i.e.*, "the lady of Isin" for the life of Sumu-ilu, "king of Ur," by a high dignitary of Lagash. We infer from this dedication that this goddess must have been regarded as specially powerful at the time the subject was inscribed. This leads us to the period when the dynasty of Isin played a leading part in the shaping of Babylonian affairs; in other words, about the time of Ishme-Dagân—nearly the same result reached by Thureau-Dangin from palaeographical considerations (*Revue d'Assyriologie*, Vol. VI, p. 70). Whether Sumu-ilu lived before Gungunu or after him cannot be decided at present.

[3] Cf. also Thureau-Dangin, *Revue d'Assyriologie*, Vol. VI, p. 70, note 7.

[4] There are a number of other "kings" (cf. also p. 51, above), who up to the present time cannot be placed in any of the known dynasties. Cf. *Bu-nu-taḫ-tu-un-i-la* (*C. B. M.* 1629, Ranke, *B. E.*, Series D, Vol. III, pp. IXf., and Series A, Vol. VI, Part 1, No. 6) or corrupted *Bu-un-taḫ-un-i-la* (*Bu.* 91-5-9, 2184, and King, "The Letters and Inscriptions of Ḫammurabi," Vol. III, p. 220, note 16; Daiches, *A. R.*, p. 27, note 2, and Ranke, *l.c.*), a contemporary of Sumu-la-ilu apparently to be analyzed as **Bûn(u)-taḫtûn-ila**, *i.e.*, "The child is the protégé of the god" or "of ^{d}*Ila*" (*taḫtûn* [form *taf'ûl* from *ḫatânu*, "to protect"] has a double meaning, 1. "protection," 2. "protégé," cf. the similar use of *migru*). Possibly he also belongs to the dynasty of Larsa, being a predecessor of *Nûr-Immer*. To the same dynasty and general period I assign King **Ma-na-ma-an-te-el** (for the formation of his name cf. *Su-mu-en-te-il*, *Bu.* 91-5-9, 2378 = "Cuneiform Texts," Vol. VIII, Pl. 38, li. 11), unless indeed the two kings mentioned are representatives of another dynasty (Erech, "Sea Land"?) temporarily gaining some influence in a certain part of Babylonia. Concerning **Nûr-Dagân** and **Sin-îribam** cf. p. 51, above. As to **Immerum** and **Ilu-ma-(^{d})I-la**, two other contemporaries of Sumu-la-

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Erech"[1] (the former of the last mentioned two rulers also styling himself "king of Amnanu"[2]), and also the beginning of the city kingdom of Babylon under Sumu-abu(i), founder of the first dynasty of Babylon, in this period of *Babylonisches Faustrecht.* Once more Isin regained its political influence under Sin-mâgir and his son Dâmiq-ilishu, who both have the title "king of Shumer and Akkad" and otherwise left their traces in Babylonian history.[3] Upon the death of the latter the dynasty of Larsa, temporarily represented by Rîm-Sin, son of Kudur-Mabuk, the Elamite, who seems to have overthrown Sin-iddinam, son of Nûr-Immer, of the native dynasty of that city, took the leading rôle in the shaping of Babylonian politics; but only for a short period (c. 30 years), for the kings of Babylon made themselves more and more felt in the North, until finally Ḫammurabi defeated the Elamite army and united the various Babylonian cities and states under his powerful sceptre.

A word remains to be said with regard to *Immerum* and *Ilu-ma-^{d}I-la*,[4] so-called "*Usurpatoren*," who were contemporaneous[5] with Sumu-la-ilu of the first dynasty of

NI-NI (= *ili*) + *ma* + *AN* (= *ilu*), therefore to be transliterated as *Bil-ili-ma-ilu* = *Bêl-ilê* (cf. Ranke, Series D, Vol. III, p. 224)-*ma-ilu*, "The lord of gods (an epithet of Ae, Shamash, Sin, etc.) is god," or better (the sign "*bil*" frequently having the value "*bì*" at this period, cf. p. 48, above) as **Bì-ili-ma-ilu** = *Bêli-ma-ilu*, "The lord is god," an abbreviated name, as indicated by the *ma* after *Bîli* (probably standing for *Bêl-ilê*, cf. my remarks in *B. E.*, Series D, Vol. III, p. 186, note 1, and *B. E.*, Series A, Vol. X, pp. Xff.). The question may be asked whether or not this king is identical with the first king of the so-called second dynasty, *AN-ma(-ilu)*, generally read *Ilu-ma-ilu*; for the sign *AN* is also ideogram for "*bêlu*" (V *R.*, 21, 17g) and *sharru* (V *R.* 30, 8a). The tablet was found at Nippur by the first expedition together with a number of tablets dated in the reign of Samsu-iluna. It, therefore, belongs to that general period. My pupil, Dr. Arno Poebel, who has a volume on the tablets of the Ḫammurabi dynasty excavated at Nippur in the course of preparation (= Series A, Vol. VI, Part 2), informs me that certain names occurring in the *Bì-ili-ma-ilu* tablet are found also on *Samsu-iluna* tablets. Hence *Bêli-ma-ilu* must belong to the dynasty of a city which under Samsu-iluna or soon after him (cf. King, "Letters," Vol. III, p. LXIX) obtained a signal success, even occupying Nippur (as tablets were dated there according to this king's reign). Unless, as just stated, he was the first king himself, he probably was a prince of the second dynasty. At any rate, as already indicated by the absence of the determinative *ilu* before his name, he cannot be regarded as a member of the Isin dynasty. As to the king **Gir-Ma-Ma** or **Arad-Shá(g)-Shá(g)** (made known by Scheil in *Recueil*, Vol. XXIV, *Note* LXII, and *O. L. Z.*, 1905, Col. 351) cf. Thureau-Dangin, *Les Inscriptions de Sumer et d'Akkad*, pp. 344f. For the king *AN-A-AN* see the references given pp. 56a, f., below.

[1] For the literature concerning their inscriptions cf. Thureau-Dangin, *l.c.*, pp. 294f., 316f., also pp. 344f.

[2] Cf. Winckler, *Sumer und Akkad*, p. 13, and *Untersuchungen zur altorientalischen Geschichte*, pp. 40f.

[3] Cf. pp. 49f. I regard the one as the founder of *Bît-Sin-mâgir shá mât tâmdi* (cf. *B. E.*, Series A., Vol. I, Part I, Pls. 30–31 and pp. 38ff., and Weissbach, *Babylonische Miscellen*, p. 1), and the other as the ancestor of *Shimmash-Shipak*, son of *Erba-Sin*, of the fifth dynasty (or the "Sea-Land"), *ṣâb palî Dâmiq-ilishu*, *i.e.*, "man of the dynasty of *Dâmiq-ilishu*" (Chronicle S, published by Winckler, *Untersuchungen zur altbabylonischen Geschichte*, p. 153).

[4] Generally read *Anman* or *Anmanila*, cf. Daiches, *A. R.*, pp. 31ff., Thureau-Dangin, *Les Inscriptions de Sumer et d'Akkad*, pp. 340f., note 3; but cf. Ranke, *B. E.*, Series A, Vol. VI, Part 1, p. 8.

[5] Cf. Daiches, *A. R.*, pp. 33ff., 35ff.

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Babylon. I cannot enter here into a full discussion of a most interesting and difficult problem, but must confine myself to a brief statement of my own view.

Thureau-Dangin has recently shown[1] that *Im-me-rum* (variant : *I-im-me-ir* and *I-im-me-rum*) is an abbreviated name containing the name of the god *Immer*, whom I regard as identical with the god *Im-ra* or *Mir-ra*.[2] In the passages given by the French scholar *Immerum* is abbreviated from *Na-ra-am-^{d}IM*, but it goes without saying that any other name having the same god as second element could also be shortened to *Immerum*. Thureau-Dangin concludes correctly that the name of King *Nûr-^{d}IM* of Larsa (father of Sin-iddinam), generally read *Nûr-Rammân* or *Nûr-Adad*, must be transliterated as *Nûr-Immer*.[3] We draw still another conclusion. As indicated above (p. 54), at the time of Libit-Ishtar and Ur-^{d}*NIN-IB* the city of Larsa began to make itself felt in Babylonian affairs through Gungunu, "king of Ur," and "king of Larsa, king of Shumer and Akkad." It, therefore, is certain that a dynasty of Larsa actually existed about 30–40 years before the time of Sumu-la-ilu, whose reign of 36 years commenced about the 19th or 20th year of Bûr-Sin II of Isin (cf. pp. 49f., note 5). From other passages we infer that Larsa's influence gradually extended far into Northern Babylonia, including Sippar,[4] where the same cult of Shamash flourished; and, furthermore, that **Nûr-Immer, king of Larsa,** who in his inscription from Ur[5] has the determinative *ilu* before his name, and, therefore (cf. pp. 51f.), at some time must also have possessed Nippur, **is identical with Immerum,[6] the contemporary of Sumu-la-ilu.**

Repeated attempts have been made to identify *AN-A-AN* (generally read *Ilu-ma*, "secretary,"[7] son of Bêl-shemea, identified by me[8] with *AN-A-AN*, "the *ab-ba* of the people of Erech") with *AN-A-AN*, *lugal*, occurring in two dated tablets published by Scheil and Thureau-Dangin (cf. pp. 55f., note 4, above), and *AN-ma* (-*AN*) (generally read *Ilu-ma*, resp. *Ilu-ma-ilu*), the first king of the so-called second dynasty, with

[1] Cf. *Les Inscriptions de Sumer et d'Akkad*, p. 296, note 2.

[2] Cf. the names quoted by Ranke, *B. E.*, Series D, Vol. III, p. 202.

[3] Cf. also the interchange of ^{d}*Im-ra* and ^{d}*Im* (^{d}*Im* is abbreviated from ^{d}*Im-ra*?) in the date formula of Hammurabi's 18th year (quoted by Lindl), Ranke, *B. E.*, Series D, Vol. III, p. 202, note 2.

[4] Cf. already Niebuhr in *Mitteilungen der Vorderasiatischen Gesellschaft*, 1897, pp. 293f.: "*vielleicht war er* [*Immerum*] *gelegentlich von Larsa aus über Sippar gesetzt, um diese Stadt dem babylonischen Geschlecht zu entziehen und so dessen Macht zu schwächen.*"

[5] Cf. "Cuneiform Texts," Vol. XXI, Pl. 29, No. 30070, li. 3.

[6] This will explain to Daiches (*A. R.*, p. 26) why "the king of Larsa" is not mentioned in connection with Immerum and Sumu-la-ilu in the oath-formulas of dated tablets—Immerum himself being that king of Larsa.

[7] For this reading (=*ṭupsharru*) cf. Ranke, *B. E.*, Series A, Vol. VI, Part 1, p. 8, note 1.

[8] Cf. *B. E.*, Series A, Vol. I, Part 1, No. 26 (and Part 2, p. 48, note 3); *Assyriaca*, pp. 101ff. Cf. also Hommel (who first analyzed the inscription correctly) in *P. S. B. A.*, Nov., 1893, pp. 13ff.; Winckler, *A. F.*, First Series, pp. 274f.;

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AN-ma-NI-la (read *Ilu-ma-I-la* by Ranke, cf. p. 55, note 4, above), or *AN-ma-^{d}I-la*, contemporary of Sumu-la-ilu of the first dynasty of Babylon, or to regard them all as the same person. The political situation seems to favor these identifications. For it can be shown that both Uruk and the "Sea-Land," where the second dynasty doubtless arose (cf. p. 43, above), began to influence Babylonian politics at that very time. If we allow this identity, we would obtain as contemporaries Bûr-Sin II (or his two sons) of the Isin dynasty, Sumu-la-ilu of the Ḫammurabi dynasty,[1] Nûr-Immer (or Immerum) of the Larsa dynasty, and *AN-ma-ilu(a)*, founder of the so-called second dynasty. It then would follow with great probability that *Dâmiq-ilishu*, last king of the Isin dynasty, and *Damki-ilishu*, third king of the so-called second dynasty, are identical, since the interval between the unclassified *AN-ma-^{d}Ila* (contemporaneous with Sumu-la-ilu and Bûr-Sin II, resp. his two sons) and Dâmiq-ilishu of Isin is practically the same as the interval between the second half of the reign of AN-ma-ilu and Damki-ilishu of the second dynasty. And it would also follow, that Sin-mâgir, father of Dâmiq-ilishu of Isin, was a prince of the ancestral home of the second dynasty, *i.e.*, the "Sea-Land" (cf. p. 43, above), and, therefore, apparently identical with Sin-mâgir, the founder of Bît-Sin-mâgir, a province of the "Sea-Land." In this case Gulkishar, king of the "Sea-Land," would have been a contemporary of Samsu-iluna and Abi-êshuḫ. This seems to be a plausible theory, which may be supported by additional combinations, but which cannot yet be proved definitely with the material available, and with the other candidate *Bi-ili-ma-ilu* (pp. 55f., note 4, the contemporary of Samsu-ilunu) to be disposed of.[2]

[1] The 19th or 20th year of Bur-Sin II, as we saw above, is identical with the first year of Sumu-la-ilu *AN-ma-ila* of the second dynasty, who ruled 60 years, therefore, would have been contemporaneous also with *Ur-^{d}NIN-IB* of Isin and Sumu-abu, founder of the so-called first dynasty.

[2] In order to have this book appear as early as possible, Chapter V, pp. 57ff. (being written first), was printed and paged first. Afterwards it was found that the space allowed for the preceding material was underestimated a little. I consequently introduced pp. 56a and 56b.

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V.

DESCRIPTION OF TABLETS AND RUINS

Abbreviations.

c., circa; **C.B.M.,** Catalogue of the Babylonian Museum, University of Pennsylvania (prepared by the Editor) ; **cf.,** confer; **col(s).,** column(s); **Exp.,** Expedition; **f.,** following page; **ff.,** following pages; **f. e.,** from (the) end; **fr.,** fragment(ary); **frgs.,** fragments ; **inscr.,** inscription; **L. E.,** Left Edge; **li.,** line(s); **Lo. E.,** Lower Edge ; **M.I.O.,** Musée Impérial Ottoman, Constantinople ; **Ni.,** Nippur ; **Ni. V, IX,** refers to the corresponding numbers in Vol. I, Part I, Pl. XV; **No(s).,** Number(s); **O.,** Obverse; **orig.,** originally; **p.,** page; **pp.,** pages; **R.,** Reverse; **R. E.,** Right Edge; **U. E.,** Upper Edge; **Vol.,** Volume.

Measurements are given in centimetres, length (height) × width × thickness. Whenever the tablet (or fragment) varies in size, the largest measurement is given.

Texts drawn by hand and at the same time reproduced in phototype are indicated by a bold number in the first column. Tablets quoted without a number are not yet catalogued.

A. Autograph Reproductions.

Text.	Plate.	Age.	Contents.	Description.
1	1	c. 1350 B.C.	2 × 1	Unbaked. Brown with numerous black spots. Small pieces of lower part of R. chipped off. Ruled, double li. indicating end. 6.2 × 4.3 × 2.5. Inscr. 11 (O.) + 12 (R.) = 23 li. Ni. IX. Fourth Exp.
2	1	c. 1350 B.C.	6 × 1	Baked. Reddish brown. Greater part of lower half of R. chipped off. Ruled. 7 × 4.3 × 2.5. Inscr. 13 (O.) + 12 (R.) = 25 li. Ni. IX. Second Exp. C.B.M. 3335. For half-tone illustration cf. Hilprecht, *B.E.*, Series D, Vol. I, p. 531; *Vortrag*, p. 60; "Lecture," p. 51.
3	2	c. 1350 B.C.	9 × 1	Baked. Reddish brown. Partly chipped off. Li. indicating end of multiplication table. 5.8 × 4 × 2.3. Inscr. 16 (O.) + 1 (Lo. E.) + 7 (R.) = 24 li. Purchased by D. Noorian, interpreter

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Text.	Plate.	Age.	Contents.	Description.
				have come from Abû Habba, but according to all evidence (cf. pp. 14ff.) doubtless from Nippur, probably IX. C.B.M. 8535. For half-tone illustration cf. Hilprecht, *Vortrag*, p. 60.
4	2	c. 1350 B.C.	18 × 1	Unbaked. Brown with numerous black spots. Three frags. joined. Somewhat cracked, and small pieces of O. and R. chipped off. Ruled, double li. indicating end of multiplication table. 7.2 × 4.8 × 1.9. Inscr. 13 (O.) + 11 (R.) = 24 li. Ni. IX. Third Exp. C.B.M. 6063.
5	3	c. 1350 B.C.	18 × 1	Unbaked. Brown with occasional black spots. R. somewhat rubbed off, tablet otherwise well preserved. Ruled, double li. indicating end. Round impressions made with the upper end of the stylus in li. 5, 15, 17 and 19. 5.5 × 3.8 × 2. Inscr. 11 (O.) + 12 (R.) = 23 li. Ni. IX. Second Exp. C.B.M. 10221. Cf. Pl. II, No. 3.
6	3	c. 1350 B.C.	30 × 1	Fr. (lower part) of a clay tablet. Unbaked. Brown. Small piece of R. chipped off. Ruled. 3.7 (orig. c. 6.2) × 3.3 × 2. Inscr. 7 (orig. 12, O.) + 6 (orig. 11, R.) = 13 (orig. 23) li. Ni. IX. Fourth Exp.
7	3	c. 2200 B.C.	36 × 1	Fr. (upper part) of a clay tablet. Unbaked. Brown. Small pieces chipped off. Ruled. 4.5 (orig. c. 6.5) × 4.4 × 1.8 (orig. c. 2.1). Inscr. 7 (orig. 11, O.) + 6 (orig. 11, R.) + 2 (Lo. E.) = 15 (orig. 24) li. Ni. V. Second Exp. C.B.M. 8537. Cf. Pl. II, No. 4.
8	4	c. 1350 B.C.	90 × 1	Unbaked. Brown with numerous black spots. Small pieces chipped off, otherwise well preserved. Ruled, double li. after li. 8. 5.2 × 3.6 × 2.4. Inscr. 12 (O.) + 12 (R.) = 24 li. Ni. IX. Fourth Exp.
9	4	c. 1350 B.C.	100 × 1	Fr. (left part) of a clay tablet. Unbaked. Light brown. Somewhat rubbed off. Ruled. 5.8 × 3.5 (orig. c. 3.8) × 1.9. Inscr. 10 (O.) + 13 (R.) = 23 li. Ni. IX. Third Exp. M.I.O. Ni. 1143.

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Text.	Plate.	Age.	Contents.	Description.
				Somewhat rubbed off. Ruled. On U., L. and Lo. E. traces of cuneiform wedges insufficiently erased (apparently remains of the scribe's calculations). 6.2 × 4.1 × 1.8. Inscr. 11 (O.) + 12 (R.) = 23 li. Ni. IX. Third Exp. M.I.O., Ni. 927.
11	5	c. 1350 B.C.	150 × 1	Unbaked. Brown with occasional black spots. Somewhat rubbed off, parts of R. broken away. Ruled. 6 × 4 × 2.1. Inscr. 11 (O.) + 12 (R.) = 23 li. Ni. IX. Second Exp. C.B.M. 10190. Cf. Pl. II, No. 5.
12	6	c. 1350 B.C.	432 × 1	Unbaked. Dark brown with occasional black spots. Lower left corner entirely broken away. Somewhat rubbed off Li. indicating end of multiplication table (432 × 432). 8 × 5.5 × 3.4. Inscr. 14 (O.) + 12 (R.) = 26 li. Ni. IX. Fourth Exp. M.I.O., Ni. 1871.
13	6	c. 1350 B.C.	432 × 1	Fr. (central part) of a clay tablet. Unbaked. Brown with occasional black spots. Ruled, double li. indicating end. 4.9 (fr.) × 4.4 × 2.2. Inscr. 10 (O.) + 3 (R.) = 13 (orig. 23) li. Ni. IX. Fourth Exp. (Cf. M.I.O., Ni. 1911, a duplicate of the same period. Three frgs. joined. Unbaked. Brown. 6.3 (fr.) × 4.5 (fr.) × 2.5. Ni. IX. Third Exp.).
14	7	c. 1350 B.C.	450 × 1	Baked. Brown. Greater part of O. and uninscribed portion of lower right side of R. broken away. Ruled, double li. indicating end. 7.2 × 3.9 × 2. Inscr. 15 (O.) + 7 (R.) = 22 li. Ni. IX. Third Exp. M.I.O., Ni. 894.
15	7	c. 1350 B.C.	540 × 1	Unbaked. Brown with numerous black spots. In a fine state of preservation. Ruled, double li. indicating end (catch li.: 500 × 1). 5.3 × 3.4 × 2.2. Inscr. 14 (O.) + 10 (R.) = 24 li. Ni. IX. Fourth Exp.
16	7	c. 1350 B.C.	750 × 1	Unbaked. Brown. Several cracks, small pieces chipped off on both sides. Ruled (catch li.: 720 × 1, preceded by 750 × 750). 5.7 × 4.2 × 2.5. Inscr. 13 (O.) + 12 (R.) = 25 li. Ni. IX. Fourth Exp.
17	8	c. 1350 B.C.	1080 × 1. 1000 × 1.	Fr. (upper part) of a clay tablet. Unbaked.

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Text.	Plate.	Age.	Contents.	Description.
			720 × 1, 600 × 1, 540 × 1, 500 × 1.	each section (by mistake of scribe also R., Col. II, 4 f. e.). 6.6 (orig. c. 12) × 9 × 2.5. Inscr. O.: 8 (orig. 25, Col. I) + 12 (orig. 27, Col. II) + 12 (orig. 28, Col. III) + 11 (orig. 27 or 28, Col. IV) + R.: 14 (orig. 22 or 21, Col. I) + 10 (orig. 30, Col. II) + 10 (orig. 27, Col. III) + 1 (orig. c. 22, Col. IV) = 78 (orig. c. 208) li. Ni. IX. Second Exp. C.B.M. 10219. Cf. Pl. III, No. 6.
18	9	c. 2200 B.C.	Portions of 2160 × 1, 1500 × 1, 1000 × 1.	Fr. (central part) of a clay tablet. Unbaked. Brown with black spots. Ruled. 5.7 (fr.) × 6.5 (fr.) × 3.6. Inscr. O.: 3 (Col. I) + 9 (Col. II) + 11 (Col. III) + R.: 8 (Col. I) + 8 (Col. II) = 39 li. Col. III formed the last col. of O.; the complete tablet therefore had 6 cols. Ni. V. Fourth Exp. M.I.O., Ni. 1868.
19	9	c. 1350 B.C.	Portions of 300 × 1, 240 × 1, 180 × 1, 150 × 1, 144 × 1 (ending with 144^2), 120 × 1.	Fr. (upper right part) of a clay tablet. Unbaked. Brown with numerous black spots. Ruled, double li. indicating end of each section. 6.9 (orig. c. 15) × 5.2 (orig. c. 12.5) × 2.6 (orig. c. 3). Inscr. O.: 20 (Col. III) + 18 (Col. IV) + R.: 18 (Col. I) + 16 (Col. II) = 72 li. Ni IX. Fourth Exp. (Cf. C.B.M. 19841, a duplicate of the same period Fr. Unbaked. Brown with black spots. 6 (fr.) × 3.4 (fr.) × 2.5 (fr.). Inscr. 2 fr. cols. on O. (Cols. III and IV, the latter beginning with 240 × 1) and one on R. (Col. I, ending with 180 × 50). Ni. IX. Fourth Exp.).
20, O.	10	c. 2200 B.C.	45×1 (Left column written by teacher, right by pupil).	Seven frgs. of a clay tablet joined. Unbaked. Light brown with occasional black spots. Ruled. 13 (orig. 17.3) × 11 × 3.3. After these frgs. had been copied, an eighth fr. (C.B.M. 11402, also excavated at Ni. V by the First Exp.) was found to belong to the same tablet (joined on Pl. IV). Its O. being uninscribed, this fr. was disregarded in the autograph copy on Pl. 10. Inscr. on O.: 17 (orig. 23, Col. I) + 7 (orig. 10, Col. II) = 24 (orig. 33) li. Ni. V. First Exp. C.B.M. 11340. Cf. Pl. IV,

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Text.	Plate.	Age.	Contents.	Description.
			from 1½ to 81 with their quotients, and 50 × 1, written alternately 3 times.	of each section. Inscr. on R.: 28 (orig. probably 38, Col. I) + 28 (orig. probably 37, Col. II) + 21 (orig. probably 29, Col. III) + 25 (orig. probably 32, Col. IV) = 102 (orig. probably 136) li. C.B.M. 11340 + 11402. Cf. Pl. V, No. 7, R. (Cf. M.I.O., Ni. 1960, a duplicate of the same period. Fr. Unbaked. Brown. 7.8 (fr.) × 4.2 (fr.) × 2.7 (fr.). R., last col. Preserved portion of O. uninscribed. Ni. V. Fourth Exp.).
21, O.	10	c. 2200 B.C.	50 × 1	Fr. (left lower part) of a clay tablet. Unbaked. Light brown. Much rubbed off and otherwise damaged. Ruled. 7 (fr.) × 7 (fr.) × 2.8 (fr.). Inscr. on O.: 9 (orig. 22) + 1 (Lo. E.) = 10 (orig. 23) li. Ni. V. First Exp. C.B.M. 11368.
21, R.	10	The same.	Divisors of 12,960,000 and 50 × 1, written alternately.	The same. Inscr. on R. 9 (Col. III) + 9 (Col. IV) = 18 li. Col. III, 1–9, contains the divisors 27 to 54 with their quotients, Col. IV: 50 × 30, 50 × 40, 50 × 50, and the divisors 1 (resp. 1½) to 9 with their quotients.
22, O.	12	c. 2200 B.C.	Divisors of 12,960,000 (Col. I) and 50 × 1 (Col. II).	Fr. (central part) of a clay tablet. Unbaked. Light brown. O. somewhat, R. much rubbed off, a small hole running half way through tablet from O. towards R. Ruled. 9 (fr.) × 9.1 (orig. c. 15) × 3.9. Inscr. on O.: 11 (Col. I) + 13 (Col. II) + 3 (Col. III, last col.) = 27 li. Ni. V. Second Exp. C.B.M. 11902.
22, R.	12	The same.	Portions of 1350 × 1, 1080 × 1, 960 × 1.	The same. Inscr. on R. 15 (Col. II) + 19 (Col. III) + 17 (Col. IV, last col.) = 51 li.
23, O.	13	c. 2200 B.C.	Ideograms determined by *amelu*, and their Sem.-Babyl. equivalents.	Fr. (central part) of a clay tablet. Unbaked. Light brown. Cracked and somewhat rubbed off. Ruled. 7.1 (fr.) × 9.9 (fr.) × 4.2. Inscr. on O.: 5 (Col. I, doubtless orig. preceded by another col.) + 6 (Col. II) = 11 li. Ni. V. Fourth Exp. C.B.M. 19790. Cf. Pl. VIII, No. 9, O. (also Pl. VI, No. 8, O.).
23, R.	13	The same.	Portions of 1350 × 1, 1080 × 1, 1000 × 1, 900 × 1, 720 × 1, 600 × 1	The same, but not ruled. Line indicating end of each section. Inscr. on R. (to be read from left to right, cf. p. 19, note 2): 9 (Col. I) + 13 (Col. II) + 14 (Col.

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Text.	Plate.	Age.	Contents.	Description.
24, O.	14	c. 2200 B.C.	Syllabary (*PAD* with its Sum. and Sem.-Babyl. values).	Two frgs. of a clay tablet joined. Unbaked. Light brown. O. somewhat, R. much rubbed off. Right part of O. cut away by scribe. Ruled. 7.7 (fr.) × 9.2 (fr.) × 3.3. Inscr. on O.: 4 (Col. I) + 5 (Col. II) = 9 li. Ni. V. Second Exp. C.B.M. 11097.
24, R.	14	The same.	The first 30 divisors of 12,960,000 and portions of 45 × 1, 40 × 1, 30 × 1.	The same, but not ruled. Inscr. on R. (to be read from left to right, cf. pp. 19, note 2, and 23, note 1): 15 (Col. I, left hand!) + 14 (Col. II) + 16 (Col. III) + 16 (Col. IV) + 10 (Col. V) = 71 li.
25	15	c. 2400 B.C.	Divisors of 12,960,000 and their quotients in geometrical progression.	Unbaked. Brownish gray. O. somewhat rubbed off, otherwise well preserved. Ruled with double lines. 8.2 × 6 × 2.1. Inscr. 7 (O.) + 8 (R.) + 1 (U. E.) = 16 li. Ni. V. Second Exp. C.B.M. 10201. Cf. Pl. IX, No. 10.
25a	15	c. 2350 B.C.	Arithmetical calculations.	Three frgs. of a clay tablet joined. Unbaked. Dark brown. O. considerably chipped off. R. almost entirely broken away, a few cuneiform characters (beginnings of 15 li.) preserved, sufficient to show that the contents of R. was similar to that of O. Ruled. 10.9 (fr.) × 7.15 (fr.) × 2. Inscr. on O.: 20 (Col. I) + 16 (Col. II) = 36 li. Ni. V. Second Exp. C.B.M. 12648.
26	16	c. 1350 B.C.	Squares of 1 to 50.	Unbaked. Brown with numerous black spots. Right upper corner broken away, small pieces chipped off. Ruled, double li. indicating end. 6.5 × 4.4 × 2.7. Inscr. 13 (O.) + 10 (R.) = 23 li. Ni. IX. Fourth Exp. Cf. Pl. X, No. 12, O., also No. 11, O. and R. (= C.B.M. 19836, a duplicate referred to as Fr. b on Pl. 16), and IV *R.*², 37, Fr. 12136 (additions: 81-2-1, 72), R., Col. III.
27	16	c. 2200 B.C.	Square roots 1 to 12.	Fr. (right lower part) of a clay tablet. Unbaked. Light brown. O. erased, traces of a few cuneiform signs left. R. considerably rubbed off. Ruled. 8.1 (fr.) × 5.6 (fr.) × 2.9 (fr.). Inscr. on R.: 12 li. (Col. I). Ni. V. Fourth Exp. C.B.M. 19813. Cf. Pl. X, No. 13, also IV *R.*², 37, Fr. 12136 (additions: 81-2-1, 72), R., Col. II, and *K.* 3168, R.

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Text.	Plate.	Age.	Contents.	Description.
28	16	c. 2200 B.C.	Square roots 30 to 40.	Unbaked. Brown with occasional black spots. Lo. E. broken away, small piece of O. chipped off. R. uninscribed. 6.4 (fr.) × 5.2 × 1.8. Inscr. 11 li. (2 cols.). Ni. V. Fourth Exp. Cf. Pl. X, No. 14, also IV *R.*², 37, Fr. 12136 (additions: 81–2–1, 72), R., Col. II, and *K.* 3168, R. Cf. likewise *Verzeichnis der Vorderasiatischen Altertümer und Gipsabgüsse in den Königl. Museen zu Berlin*, 1889, p. 65, *Th.* 253. See p. 23, note 3, above.
29, O.	17, 18	c. 2200 B.C.	Measures of capacity and weights.	Three frgs. of a clay tablet (joined on Pl. XI). Unbaked. Light brown. Much rubbed off, small pieces broken away, partly crumbling. Ruled. 19.3 × 16.3 (fr.) × 3.5 (fr.). Long after Pl. 17 had been prepared, the 2 frgs. joined and published on Pl. 18, which belong to the same tablet, were discovered. Inscr. on O.: 19 (Col. II) + 17 (Col. III) + 33 (orig. 39, Col. IV) + 28 (Col. V) + 23 (Col. VI) = 120 li. The complete tablet had 12 cols., 6 on O., and 6 on R. Ni. V. Second and Fourth Exps. C.B.M. 10990 (II. Exp.) + 19815 (IV. Exp.) + 19757 (IV. Exp.). Cf. Pl. XI, No. 15, O., also Pl. XIV, No. 16, R. Cf. likewise Meissner, *Beiträge zum altbabylonischen Privatrecht*, Pls. 58 (= *V. A.* 2596) and 56–57 (= *V.A.* 1155), and Scheil, *Sippar*, pp. 52f. and 49ff.
29, R.	17, 19	c. 2200 B.C.	Weights continued, measures of surface and length.	The same. Inscr. on R.: 18 (Col. I) + 18 (Col. II) + 24 (Col. III) + 17 (Col. IV) + 14 (Col. V) + 4 (Col. VI) = 95 li. Cf. Pl. XII, No. 15, R., also Scheil, *Sippar*, p. 54.
30, O	20	c. 1350 B.C.	Measures of length, including cubits of different standards, *ṣubbân* and *ashlu*, with their corresponding values.	Nine frgs. of a clay tablet joined. Baked. Brown. Writing very distinct. To facilitate reading, cuneiform signs in tabular statements are connected by heavy shallow lines drawn with the upper (round) end of the stylus. A heavy li. made in the same manner indicates the end of each section. 10 (fr.) × 9 × 3. Inscr. on O.: 26 (Col. I) + 26 (Col. II) + 25 (Col. III) = 77 li. Ni. IX. Third

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Text.	Plate.	Age.	Contents.	Description.
30, R.	20	The same.	Measures of length continued, weights and measures of capacity, with their corresponding values.	The same. Inscr. on R. 26 (Col. IV) + 19 (Col. V) + 32 (Col. VI) = 77 li.
31	21	c. 1350 B.C.	Measures of capacity (or weights?) to 1 *GIN*, with their corresponding values.	Fr. (lower part) of a clay tablet. Unbaked. Light brown with numerous black spots. Cracked. R. considerably chipped off. Ruled. 4 (fr.) × 5.6 × 2.4. Inscr. 10 (orig. 25, O.) + 8 (orig. probably 14, R.) = 18 (orig. probably 39) li. Ni. IX. Fourth Exp. (Cf. M.I.O., Ni. 1903, a duplicate of an earlier period (c. 2200 B.C.) Fr. Unbaked. Brown. Inscr. 5 li. on O. (identical with li. 15–20 of our text). Ni. V. Fourth Exp.).
32	21	c. 2200 B.C.	Measures of capacity (or weights?) from 20 *SHE* to 1 *GIN*, and their corresponding values.	Unbaked. Brown with numerous black spots. Cracked. Small piece broken out from the middle of U. E., otherwise well preserved. Ruled, double li. indicating end. 8.5 × 6.5 × 2.8. Inscr. 14 (O.) + 5 (R.) = 19 li. On the lower part of R. and on the 4 edges numerous wedges insufficiently erased. Ni. V. Fourth Exp.
33	22	c. 2200 B.C.	Measures of capacity (or weights?) from 1 to 19 *GIN*, with their corresponding values.	Unbaked. Dark brown. Small pieces chipped off. Ruled, double li. indicating end. 8.9 × 5.2 × 2.8. Inscr. 14 (O.) + 9 (R.) = 23 li. Ni. V. Second Exp. C.B.M. 4505.
34, R.	22	c. 2200 B.C.	Measures of capacity (or weights?) with their corresponding values. Portions of 1 to 20 *GIN* preserved.	Two frgs. of a clay tablet joined. Unbaked. Light brown with numerous black spots. Ruled. 7.4 (fr.) × 5.9 (fr.) × 3 (fr.). The preserved portion of O. uninscribed. Inscr. on R.: 12 (Col. I) + 4 (Col. II) = 16 li. Ni. V. Fourth Exp. C.B.M. 19820.
35, R.	22	c. 2200 B.C.	Measures of capacity with their corresponding values. Portions of 2 *GIN* to 9 *QA* preserved.	Two frgs. of a clay tablet joined. Unbaked. Light brown with large black spots near upper part of R., O. entirely broken away. Ruled. 10.2 (fr.) × 6.8 (fr.) × 2.8 (fr.). Inscr. on R.: 12 (Col. I) + 12 (Col. II) = 24 li. C. 1 cm. of the uninscribed upper and lower parts of the tablet disregarded in the autograph copy. Ni. V. Fourth Exp. C.B.M.

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Text.	Plate.	Age.	Contents.	Description.
				Brown. 6.7 (fr.) × 4.3 (fr.) × 2.5 (fr.) Probably R. Ni. V. Fourth Exp.).
36	23	c. 2200 B.C.	Measures of capacity, from 1 *GIN* to 120 *GUR*, with their corresponding values.	Four frgs. of a clay tablet joined. Unbaked. Brown. Several cracks. Small pieces broken away, much rubbed off. About $\frac{2}{7}$ of original length of tablet wanting. Ruled, double li. indicating end. 11.5 (orig. c. 15.5) × 6 × 3.2. Inscr. 41 (orig. c. 60, O.) + 32 (orig. c. 52, R.) = 73 (orig. probably 112) li. The 2 numbers (not erased) below the double line indicate that the scribe intended to continue his table beyond 120 *GUR*. Ni. V. Fourth Exp.
37, O.	24	c. 2200 B.C.	Syllabary (*KUL, LA, SI, sî-gunû, UM, TUB* with their Sum. values).	Fr. (lower part) of a clay tablet. Unbaked. Brown with numerous black spots. Small pieces broken off. Right part of O. cut away by scribe. Ruled. 8.5. (orig. c. 16.2) × 11.17 × 3.3. Inscr. on O.: 10 li. Ni. V. Fourth Exp.
37, R.	24	The same.	Measures of capacity, from 1 *GIN* to 1 *GUR* 180 *QA*.	The same. Inscr. on R. 11 (orig. 22, Col. I) + 11 (orig. 22, Col. II) + 11 (orig. 25, Col. III) + 13 (orig. possibly 23 (=10 *GUR*), Col. IV) = 46 (orig. c. 92) li.
38, O.	25	c. 2200 B.C.	Measures of capacity to 180,000 *GUR*.	Fr. (right central part) of a large clay tablet. Unbaked. Dark brown. Ruled. 7.5 (fr.) × 8.5 (fr.) × 3.8 (fr.). Inscr. on O.: 7 (Col. III) + 6 (Col. IV) = 13 li. Ni. V. Second Exp. C.B.M. 10207.
38, R.	25	The same.	List of ideograms written twice (*ditânu, pîru, ḫarrânu*).	The same. Inscr. on R.: 3 (Col. I) + 3 (Col. II, identical with Col. I) = 6 li.
39	26	c. 2200 B.C.	Measures of surface, from $\frac{1}{2}$ *GAN* (= 50 *SAR*), $\frac{1}{2}$ *GAN* + 10 *SAR*, etc., to 36 *GAN* (= 3600 *SAR*), with their corresponding values.	Five frgs. of a clay tablet joined. Unbaked. Brown with numerous black spots. Cracked and small pieces chipped off. Right upper and the two lower corners of O. wanting, about half of R. entirely broken away. Ruled, double li. indicating end. 9.3 × 5.6 × 2.8. Inscr. 17 (O.) + (orig. 1, Lo. E.) + 13 (R.) = 30 (orig. 31) li. O. arranged in 3 cols. Ni. V. Fourth Exp.
40	26	c. 2200 B.C.	Measures of surface, from 1 *GAN* (= 100 *SAR*) to 36 *GAN* (= 3600 *SAR*), with their corresponding	Unbaked. Brown with numerous black spots. Small pieces chipped off. Left upper and lower corners of O. wanting. R. cracked and otherwise damaged.

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Text.	Plate.	Age.	Contents.	Description.
				17 li. On the lower part of R. numerous wedges insufficiently erased. Ni. V. Fourth Exp. (There is a fr. duplicate of the same period (upper part). Unbaked. Brown. Ruled. 4 (fr.) × 7 × 2.3 (fr.). Inscr. 6 li. on O. (1 *GAN* = 100, 1½ *GAN* = 150, 2 *GAN* = 200, to 5 *GAN*). Ni. V. Fourth Exp.)
41	27	c 2200 B.C.	Measures of length, from 1 *ubânu* (= 2 *x*) to 2 *GAR* (= 1440 *x*). [Hence 1 *ammatu* = 30 *ubânu*.]	Unbaked. Brown with numerous black spots. Small pieces chipped off. Upper half of R. E. broken away. The greater part of R. destroyed. Ruled. 5.5 × 4.3 × 1.9. Inscr. 13 (O.) + 10 (orig. 12) li. = 23 (orig. 25) li. Besides U. E., L. E. and R. E. contain 1 li. each. Ni. V. Fourth Exp.
42	27	c. 2200 B.C.	Measures of length, from 1 *ubânu* (= 10 *x*) to 2 *ammatu* (= 600 *x*). [Hence 1 *ammatu* = 30 *ubânu*.]	Unbaked. Light brown with numerous black spots. Small pieces chipped off. Ruled, double li. indicating end. 8.2 × 4.5 × 3. Inscr. 13 (O.) + 4 (R.) = 17 li. On lower part of R. numerous wedges insufficiently erased. Ni. V. Fourth Exp.
43	28	c. 2200 B.C.	Measures of length, from ½ *KAS-GID* (= 900 *GAR*) to 10 *KAS-GID* (= 18,000 *GAR*).	Two frgs. of a clay tablet joined. Unbaked. Light brown. Small pieces chipped off, a considerable portion of R. E. broken away. Ruled, double li. indicating end. 10.5 × 6.3 × 2.2. Inscr. 12 (O.) + 9 (R.) = 21 li. Ni. V. Fourth Exp.
44, O.	28	c. 1350 B.C.	Vocabulary (*ûmu* and compounds with *ûmu* in their ideogr. and syllabic (Sem.-Babyl.) writing).	Fr. (right upper part) of a clay tablet. Unbaked. Brown. 6.65 (fr.) × 3.5 (fr.) × 2 (fr.). Inscr. 12 li. (written in double cols.) on O. Ni. IX. Second Exp. M.I.O., Ni. 1893. Cf. Hilprecht, *Assyriaca*, 1894, pp. 67–72, and Scheil in *Recueil*, Vol. XIX (1896), Note XXVII, pp. 61f. A more complete duplicate of this text (cf. III *R.* 56, No. 4, restored from *K.* 6012 + *K.* 10684, with completions from Babylonian duplicates, 81-8-30, 739; 82-3-23, 4504, 4605; 82-7-14, 3756, and others) was published and translated by Pinches in "Proceedings of the Society of Biblical Archæology," Vol. XXVI (Feb. 1904), pp. 51-56 and the plate appended to his paper. Cf. besides Zimmern (who first recognized

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TEXT.	PLATE.	AGE.	CONTENTS.	DESCRIPTION.
				in *Zeitschrift der Deutschen Morgenländischen Gesellschaft*, Vol. LVIII (1904), pp. 199–202 and pp. 458–460, and Delitzsch in *Zeitgeist* (supplement to *Berliner Tageblatt*), No. 16 (April 18, 1904).
44, R.	28	The same.	Bilingual (too fr., each section closes with *rêsheshu*).	The same. Inscr. on R.: 8 li. (arranged in 4 sections).
45	29	c. 1350 B.C. (or later).	Names of the months in Sumerian and Semitic-Babylonian, followed by short bilingual sentences.	Fr. (left upper part) of a clay tablet Unbaked. Light brown with numerous black spots on O. and edges. Pieces of O. chipped off. R. ruled. 7 (fr.) × 7.6 (fr.) × 3.4 (fr.). Three cols. of writing, separated from each other by 3 perpendicular li., on O.: 8 + 10 + 4 = 22 li., and 4 li. on R. = 26 li. Ni. IX. Second Exp. C.B.M. 11063. The tablet is a duplicate of ⊕ 116 + *Sp.* II + *K.* 4158 + *K.* 2033 (= ⊕ 257) + *Rm.* 607 + *K.* 4322 + *K.* 4170 + *K.* 4317, O. (Bezold, *Babylonisch-Assyrische Literatur*, pp. 212 f.). Cf. Haupt, *Akkadische und Sumerische Keilschrifttexte*, pp. 44, 64ff. (II *R.* 18, No. 2, and V *R.* 29, No. 1), and Meissner in *Z. A.*, Vol. VII, pp. 16ff.
46	30	c. 2200 B.C.	The Babyl. ideograms of the months.	Unbaked. Light brown. Lower part of R. E. wanting. Small pieces of O. chipped off, about half of R. broken away. Ruled, double li. indicating end. 4.8 × 4 × 1.9. Inscr. 6 (O.) + 1 (Lo. E.) + 6 (R.) + 1 (L. E.) = 14 li. Ni. V. Fourth Exp. C.B.M. 19782.
47, R.	30	c. 2000 B.C.	Chronological list of early Babylonian kings (the Dynasties of Ur and Isin).	Fr. (left lower part) of a clay tablet. Baked. Reddish brown. Crumbling. Considerably rubbed off. Small pieces broken out. Writing scaling off. 8.4 (fr.) × 7.3 (fr.) × 2.7. O. badly effaced and partly covered with crystals. For the autograph copy of its inscription cf. Vol. XX, Part 2. Inscr. on R.: 25 li. (Col. IV). Probably Ni. V. Fourth (or First?)[1] Exp. C.B.M. 19797. Cf. Pl. XV, No. 17.

[1] Certain fragments of the first expedition (laid aside in the hope that fragments of the other expeditions might be joined with them, or at least be shown to belong to the same tablets) and similar fragments of the fourth expedition had been placed on the same shelf in the basement of the Museum, with a slip of paper between them. Some time when

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B. Phototype Reproductions.

Illustr.	Plate.	Age.	Contents.	Description.
1	I	c. 2200 B.C.	Northeast section of the earlier temple school and library at Nippur. Southeast view.	Extensive group of ruined rooms and galleries excavated by the Fourth Exp. in the northeast section of Ni. V. Southeast view. The floor of these building remains was reached at an average depth of 6 to 7.30 m. below the surface. The cuneiform tablets here discovered occurred in a stratum from c. 0.30 to 1.20 m. thick. An especially large number of tablets was found in the room to the extreme right in the foreground of the picture, and also in the large room to the left of the centre of the picture. In the background the ruins of the temple of Bêl, its stage-tower being covered by a modern building of the Exp. erected by Haynes. Photograph taken by Haynes, Feb. 20, 1900. Cf. Geere's survey and drawing of the ground-plan of this section of the ruins in Hilprecht, *B. E.*, Series D, Vol. I, p. 523.
2	I	The same.	The same. Northeast view.	Cf. Pl. 1 I. Northeast view. In the background the 'Afetsh swamps. Photograph taken by Haynes Feb. 20, 1900. The illustration published in Hilprecht, *B. E.*, Series D, Vol. I, p. 509, was prepared from another negative.
3	II	c. 1350 B.C.	18 × 1	Unbaked clay tablet, O. and R. Ni. IX. Cf. Pl. 3, No. 5.
4	II	c. 2200 B.C.	36 × 1	Fr. of an unbaked clay tablet, O. and R. Ni. V. Cf. Pl. 3, No. 7.
5	II	c. 1350 B.C	150 × 1	Unbaked clay tablet, O. and R. Ni. IX. Cf. Pl. 5, No. 11.
6	III	c. 1350 B.C.	1080 × 1, 1000 × 1, 960 × 1, 900 × 1, [810 (?) × 1], 720 × 1, 600 × 1, 540 × 1, 500 × 1.	Fr. of an unbaked clay tablet, O. and R. Ni. IX. Cf. Pl. 8, No. 17.
7, O.	IV	c. 2200 B.C.	45 × 1 (left column written by teacher, right by pupil).	Fr. unbaked clay tablet, O. Ni. V. Cf. Pl. 10, No. 20, O.
7, R.	V	c. 2200 B.C.	Divisors of 12,960,000 and 50 × 1, written alternately 3 times.	The same, R. Cf. Pl. 11, No. 20, R.

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Illustr.	Plate.	Age.	Contents.	Description.
			amelu, and their Semitic-Babylonian equivalents (written twice).	Light brown. O. somewhat rubbed off, R. much damaged, writing in part illegible. Ruled. 16.9 (fr.) × 10 (fr.) × 4.4. Inscr. on O.: 16 (Cols. I and II) + 12 (Col. III) = 28 li. Ni. V. First Exp. C.B.M. 11397. For the autograph reproduction of the inscr. cf. Vol. XX, Part 2.
8, R	VII	The same.	Multiplication table. The last column contains 180,000 × 1, 162,000 × 1, 160,000 × 1.	The same, but not ruled. Inscr. on R.: 7 (orig. probably 10) cols., li. indicating end of each section. For further details and the autograph reproduction of the inscr. cf. Vol. XX, Part 2.
9, O.	VIII	c. 2200 B.C.	Ideograms determined by *amelu*, and their Semitic-Babylonian equivalents.	Fr. of an unbaked clay tablet, O. Ni. V. Cf. Pl. 13, No. 23, O.
9, R.	VIII	The same.	Portions of 1350 × 1, 1080 × 1, 1000 × 1, 900 × 1, 720 × 1, 600 × 1, 500 × 1, 480 × 1, 432 × 1.	The same, R. Cf. Pl. 13, No. 23, R.
10	IX	c. 2400 B.C.	Divisors of 12,960,000 and their quotients in geometrical progression.	Unbaked clay tablet, O. and R. Ni. V. Cf. Pl. 15, No. 25.
11	X	c. 1350 B.C.	Squares of 1 to 50.	Fr. (upper part) of a clay tablet. Unbaked. Brown. Ruled, double li. indicating end. 2.9 (fr.) × 3.8 × 2.3. Inscr. 5 (O.) + 4 (R.) = 9 li. Ni. IX. Fourth Exp. C.B.M. 19836. Cf. Pl. 16, No. 26.
12	X	c. 1350 B.C.	Squares of 1 to 50.	Unbaked clay tablet, O. Ni. IX. Cf. Pl. 16, No. 26.
13	X	c. 2200 B.C.	Square roots 1 to 12.	Fr. of an unbaked clay tablet, R. Ni. V. Cf. Pl. 16, No. 27.
14	X	c. 2200 B.C.	Square roots 30 to 40.	Fr. unbaked clay tablet, O. Ni. V. Cf. Pl. 16, No. 28.
15, O	XI	c. 2200 B.C.	Measures of capacity and weights.	Three frgs. of an unbaked clay tablet joined, O. Reduced. Ni. V. Cf. Pls. 17 and 18, No. 29, O.; also Pl. XIV, No. 16, R.
15, R.	XII	The same.	Weights continued, measures of surface and length.	The same, R. Reduced. Cf. Pls. 17 and 19, No. 29, R.
16, O.	XIII	c. 2200 B.C.	Ideogrs. with occasional glosses containing their Sumerian pronunciation.	Unbaked clay tablet (in 1905 baked by Mr. C. H. Mercer in his kiln at Doylestown, Pa.). Brown. Cracked, small pieces broken away, considerably rubbed off.

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Illustr.	Plate.	Age.	Contents.	Description.
				16 li. Ni. V. Second Exp. C.B.M. 10745. For the autograph reproduction of the inscr. cf. Vol. XX, Part 2.
16, R.	XIV	The same.	Measures of capacity from 1 *GIN* upward, followed by weights (end of Col. IV).	The same. Inscr. on R.: 4 cols. For further details and the autograph reproduction of the inscr. cf. Vol. XX, Part 2. Cf. also Pl. XI, No. 15, O.
17	XV	c. 2000 B.C.	Chronological list of early Babylonian kings (R.: the Dynasties of Ur and Isin).	Fr. of a baked clay tablet, O. and R. Cf. Pl. 30, No. 47.

ADDITIONS AND CORRECTIONS.

Introduction.

Page 8, note 4: Remove "*Amshu-ili-bân*" (cf. p. 49).

Autograph Plates.

Pl. 2, No. 4, li. 19: Add marginal note: "After *A-RA* (=Sem. *adi*) insert a 'ten,' reading '20–1' (instead of '10–1,' which is a mistake of the scribe)."

Pl. 7, No. 14, li. 18: Add marginal note: "Read '30' instead of '20' (last figure of the line), the last '10' (written on the edge) evidently being broken away."

Pl. 14, No. 24, Rev.: Change the numbers indicating the columns; for the Reverse ought to be read from left to right (cf. pp. 19, note 2, and 23, note 1). Read, therefore, Col. I (instead of Col. VI), Col. II (instead of Col. V), Col. III (instead of Col. IV), Col. IV (instead of Col. III), Col. V (instead of Col. II).

Pl. 20, No. 30, Obv., Col. I, li. 25: The figure "25" printed to the left of Col. I, to indicate the corresponding line in the cuneiform text of this column, should be moved up one line. Cf. p. 36, note 1.

Pl. 29, No. 45, Rev.: Write "Last Column" below "Reverse."

Pl. 30, No. 47, Rev., li. 5: Insert "*ZU*" between the second ^{d}EN and *na*, correctly given on the original. Cf. p. 48.

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CUNEIFORM TEXTS

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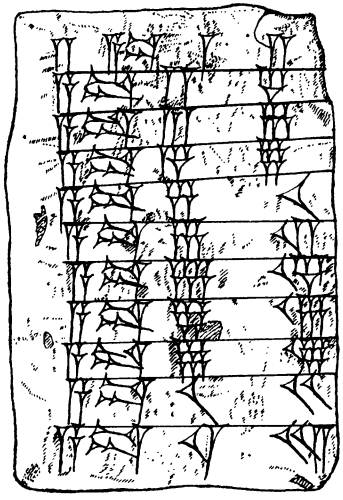
1

Obverse.



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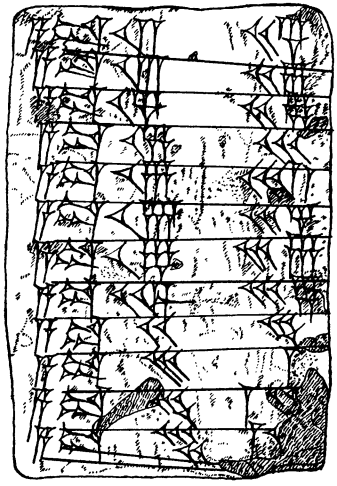
Reverse.



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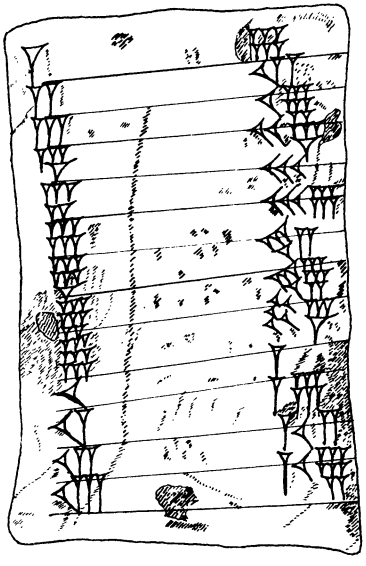

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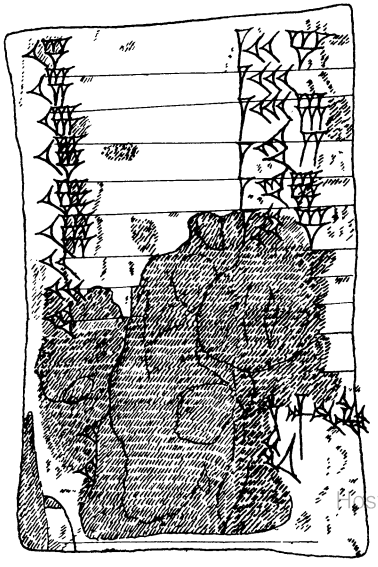

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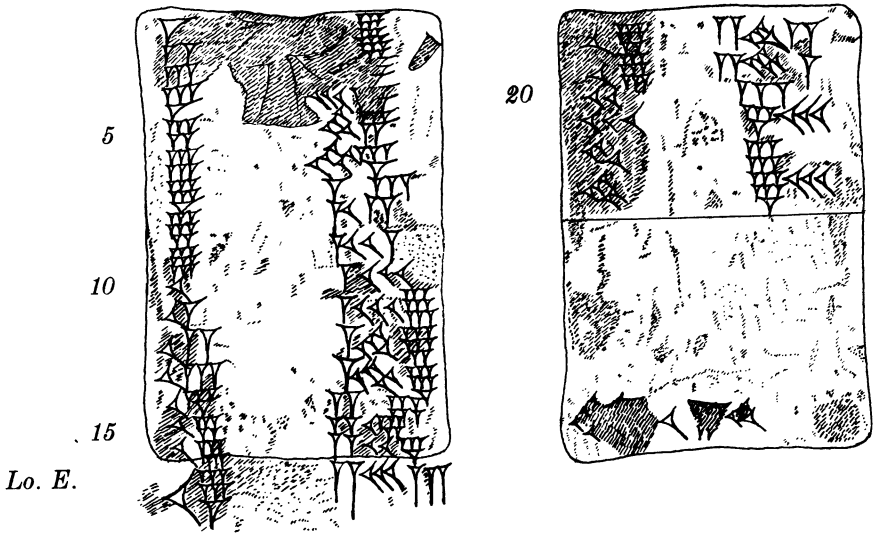
3

Obverse. Reverse.



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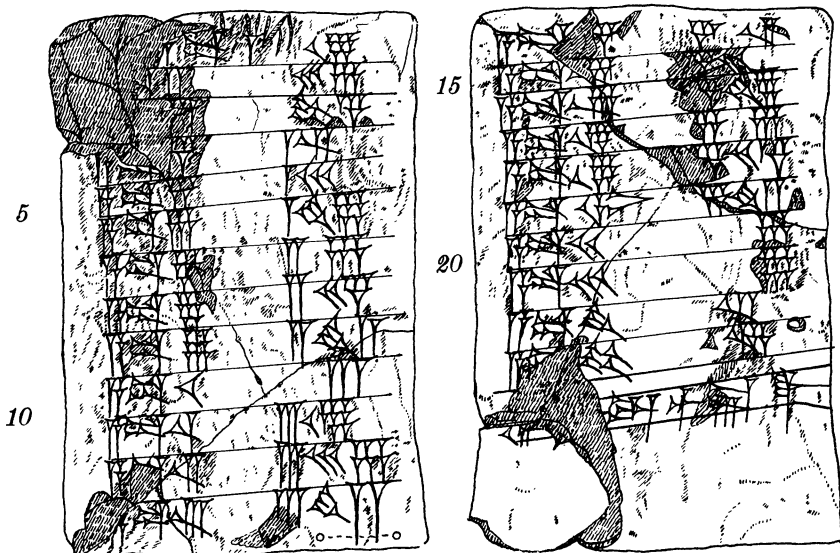

Li. 13: Mistake of scribe for

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5

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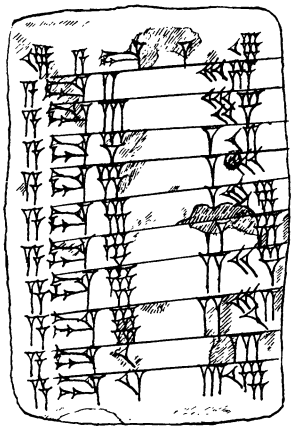

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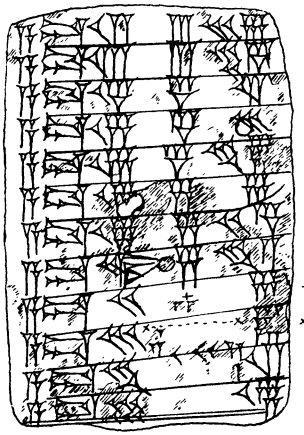

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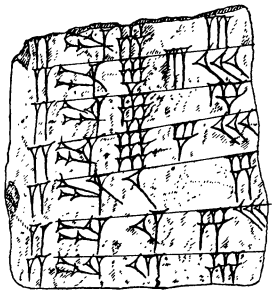

Reverse.

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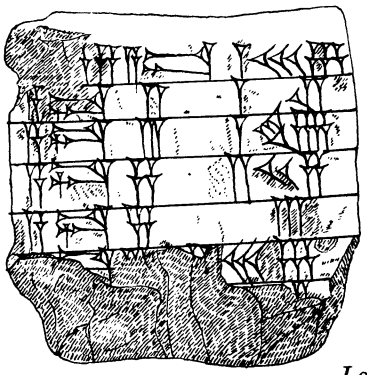

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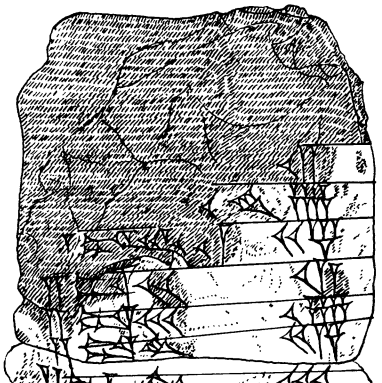

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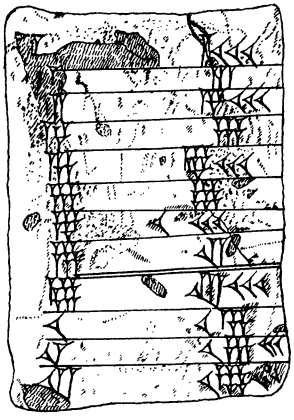

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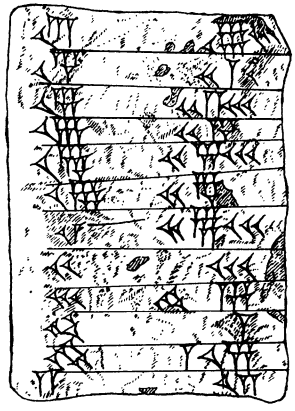

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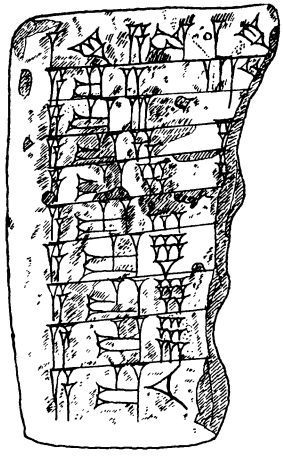

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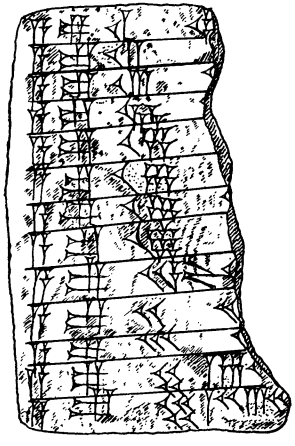

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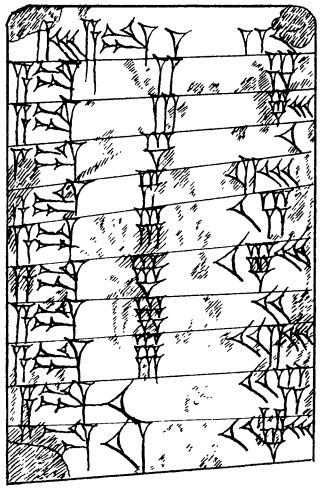

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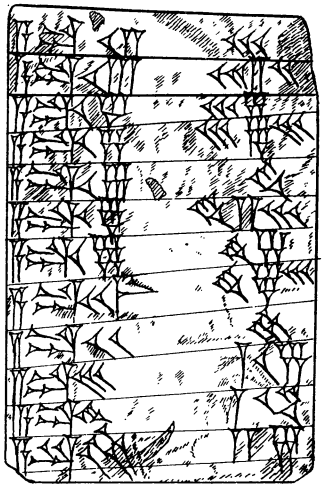

15

20

L. E.

U. E.

Lo. E.

11

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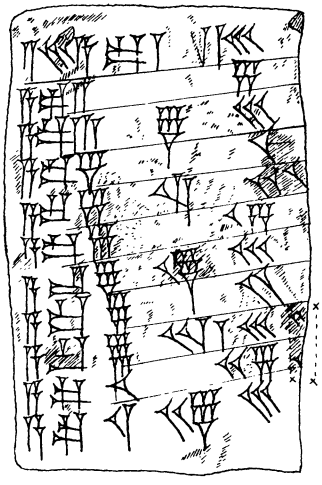

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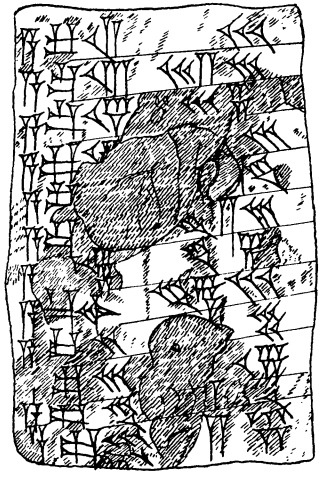

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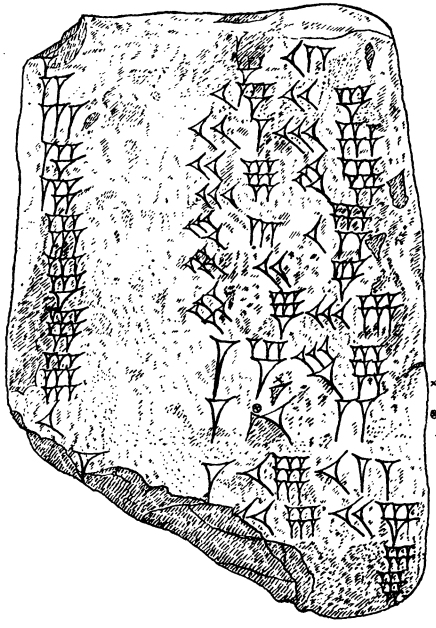

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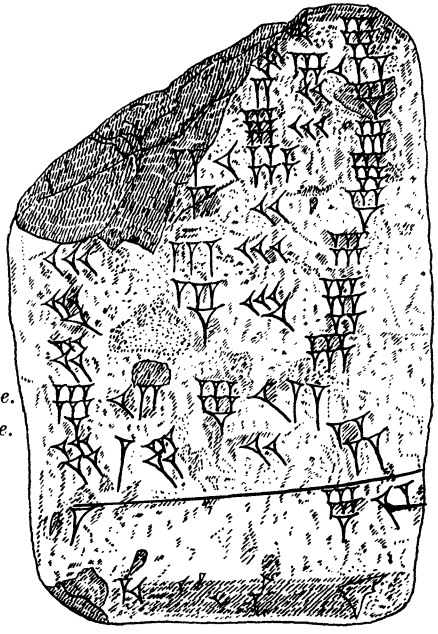

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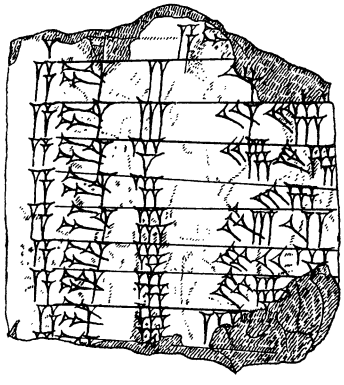

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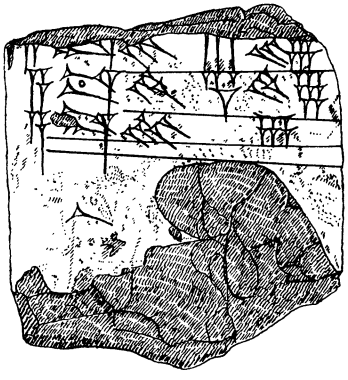

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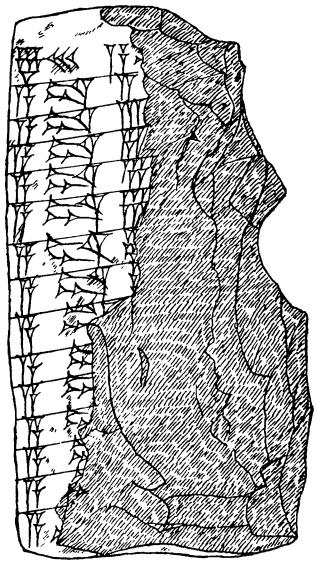

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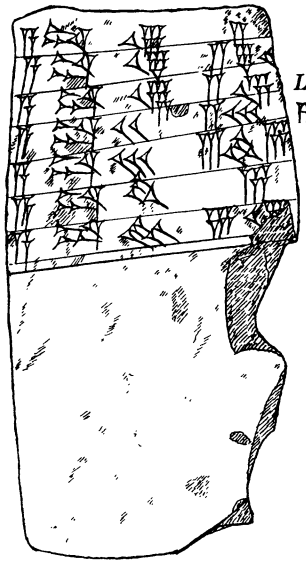

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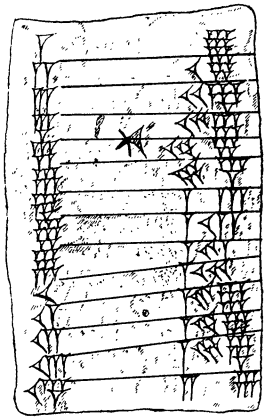

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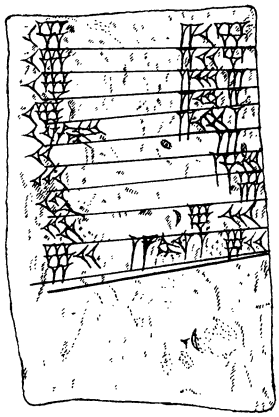

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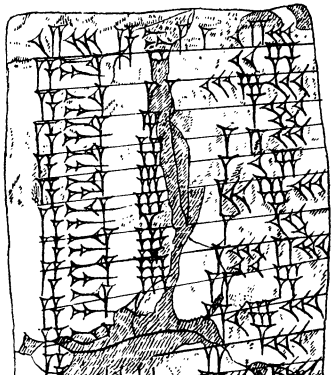

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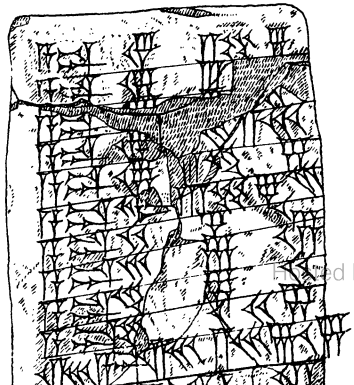

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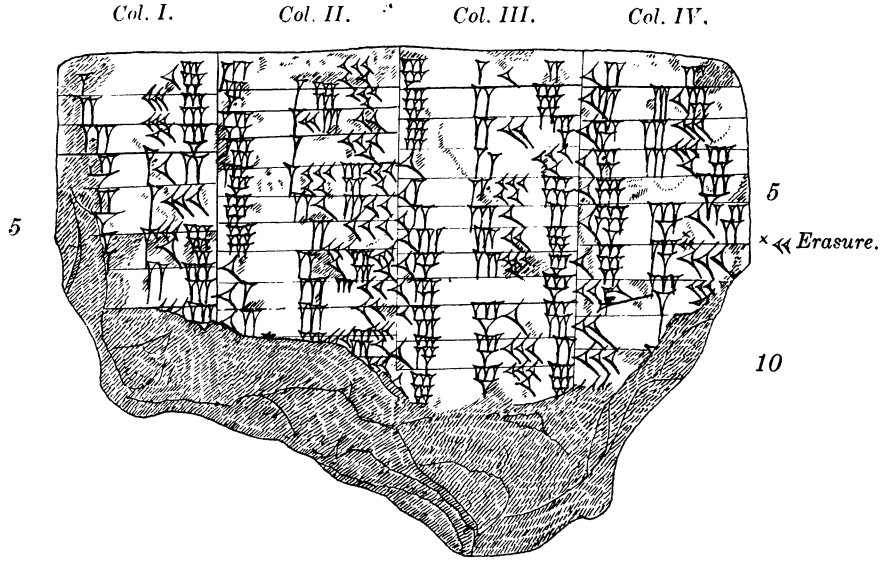

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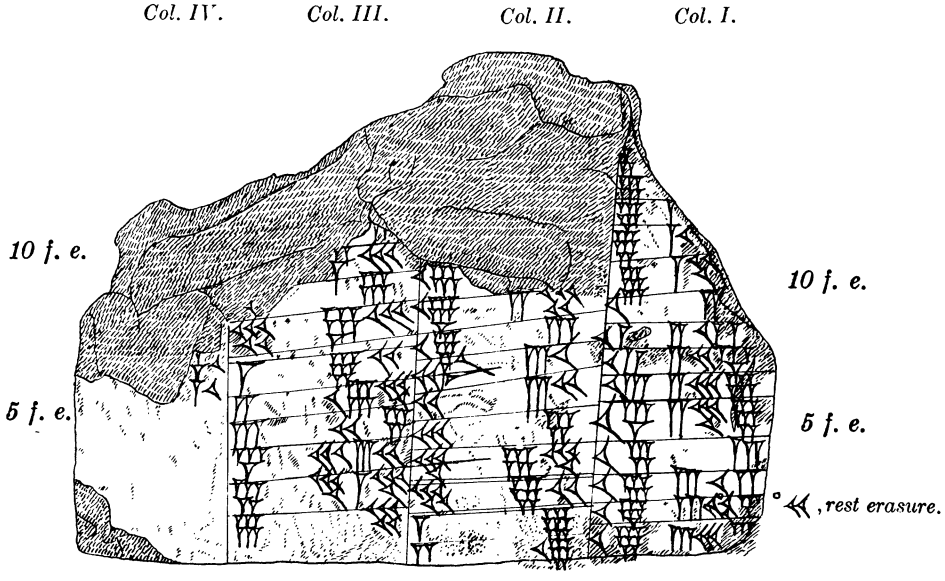

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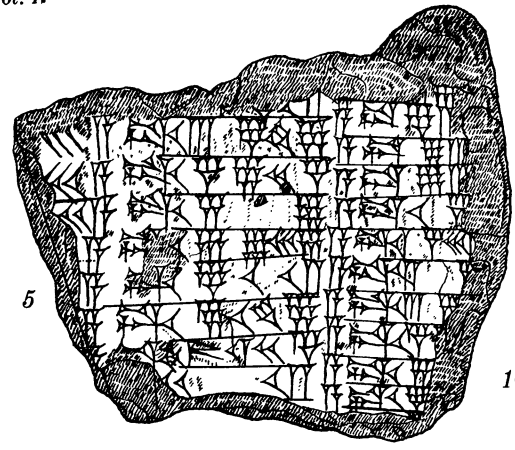
18

Obverse.

Col. I. *Col. II.* *Col. III.*



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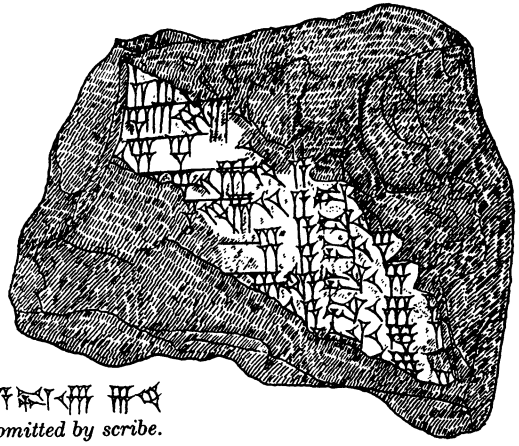
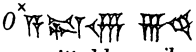
5

Reverse.

Col. II. *Col. I.*



5

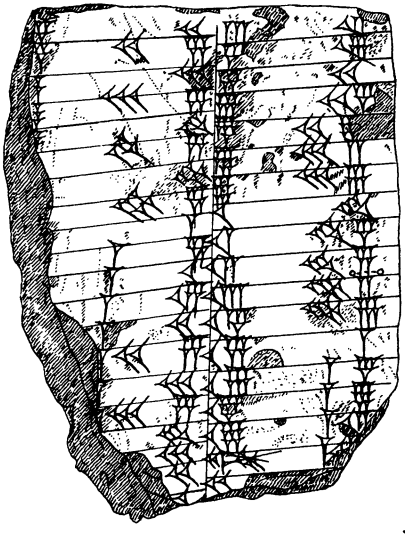
10 × 
omitted by scribe.

× *Col. II, 8 :* *written upon erasure.*

19

Obverse.

Col. III. *Col. IV.*

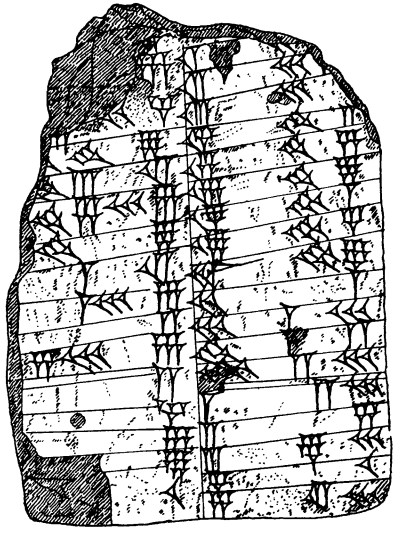


5 10 15 20

5 10 15

Reverse.

Col. II. *Col. I.*



5 10 15

5 10 15

× *Col. I, 12 : Erasure.*

Col. IV, 10 : Mistake of scribe for

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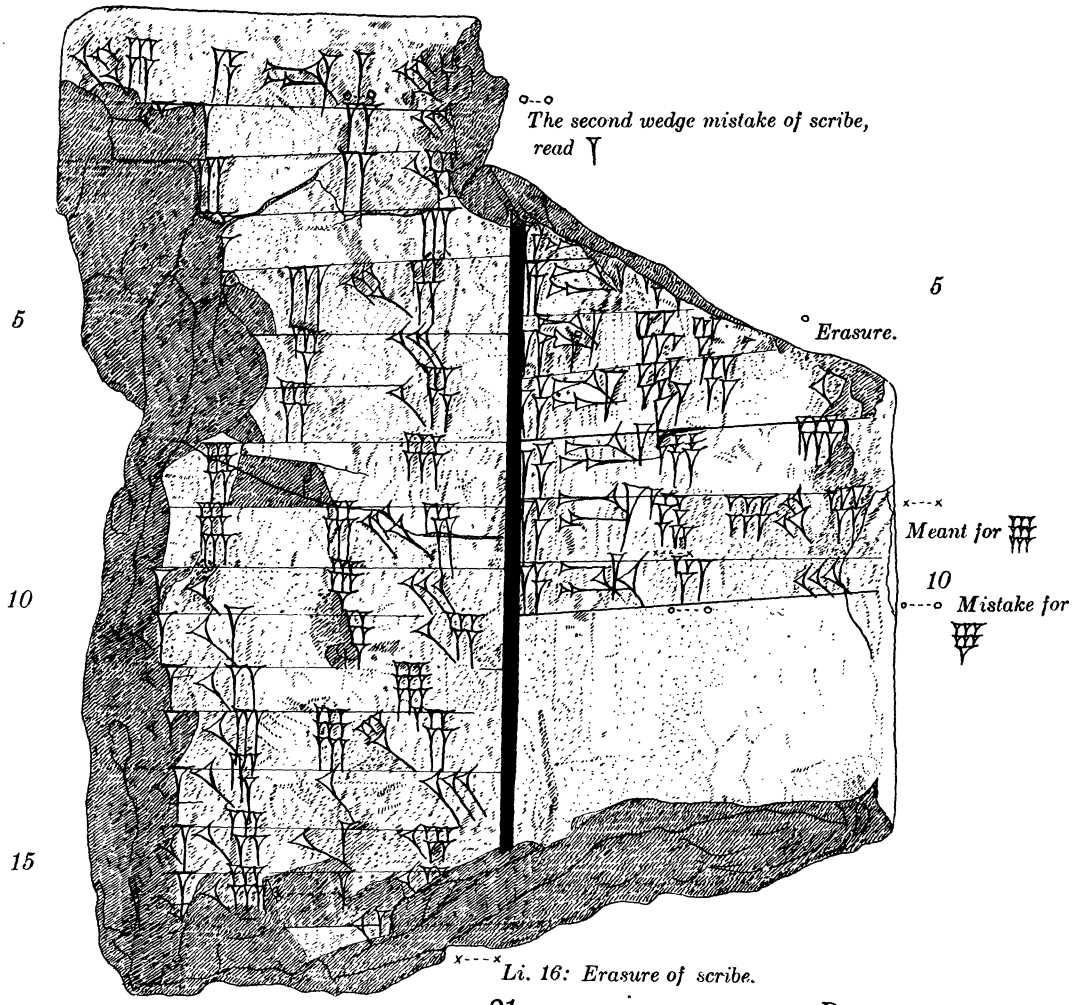
20 Obverse.

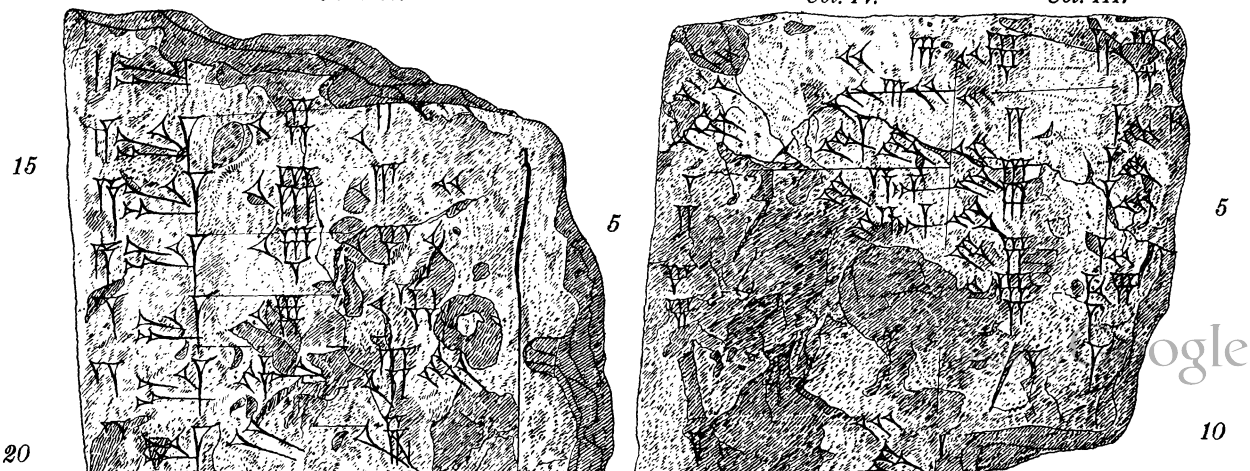
Original. Copy.



Li. 16: Erasure of scribe.

21

Obverse. Reverse. Col. IV. Col. III.

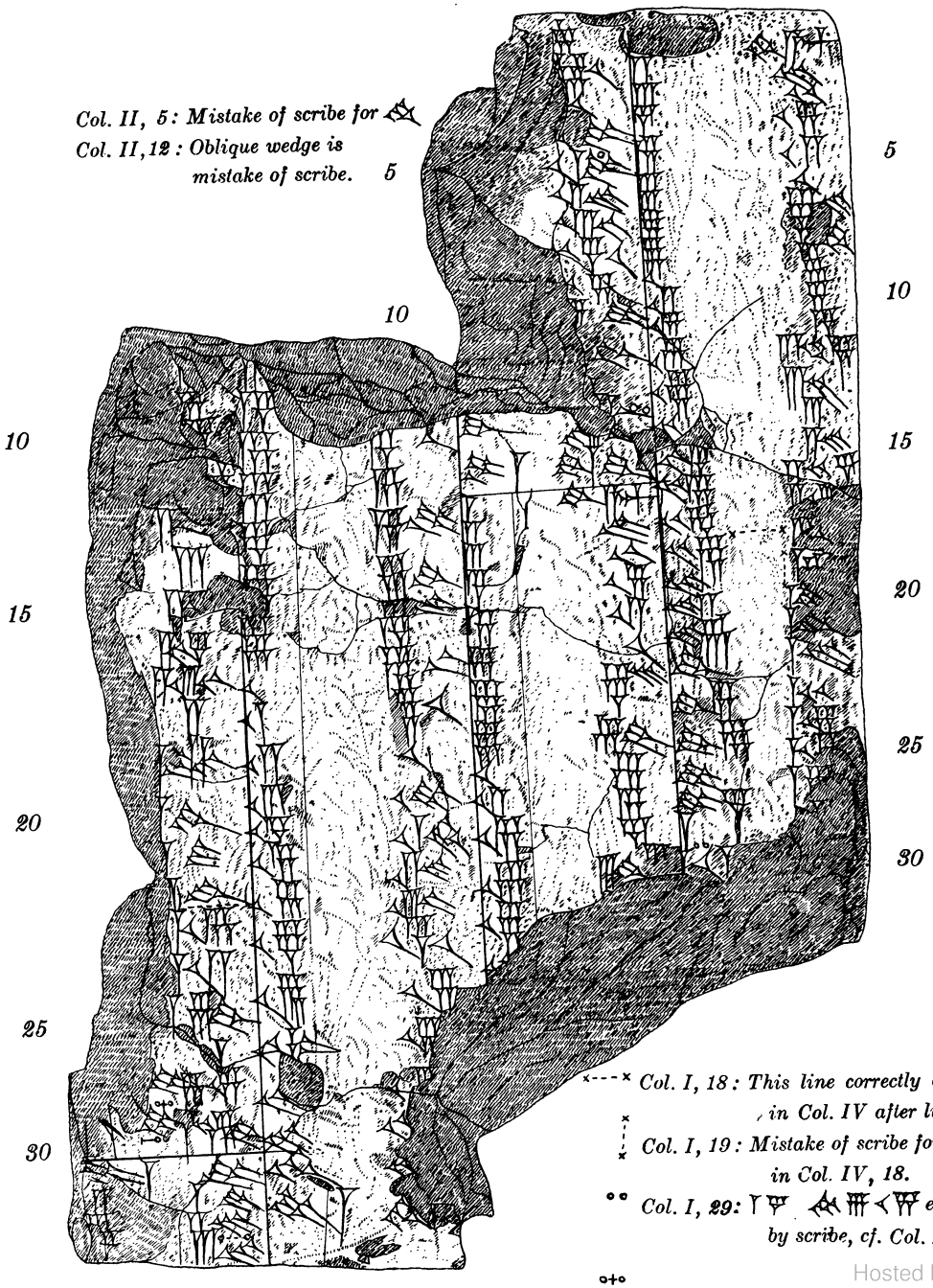


Digitized by Google

20 Reverse.

Col. IV. Col. III. Col. II. Col. I.

Col. II, 5: Mistake of scribe for
Col. II, 12: Oblique wedge is mistake of scribe.



Col. I, 18: This line correctly omitted by scribe in Col. IV after li. 17.

Col. I, 19: Mistake of scribe for correctly given in Col. IV, 18.

Col. I, 29: erroneously omitted by scribe, cf. Col. IV, 27.

Col. IV, 22: Mistake of scribe for , cf. Col. I, 23. Col. IV, 28-29, erroneously omitted by scribe. Li. 28: Insert , cf. Col. I, 30. Li. 29: Insert . Col. IV, 30: Mistake of scribe for . Col. IV, 34: Mistake of scribe for .

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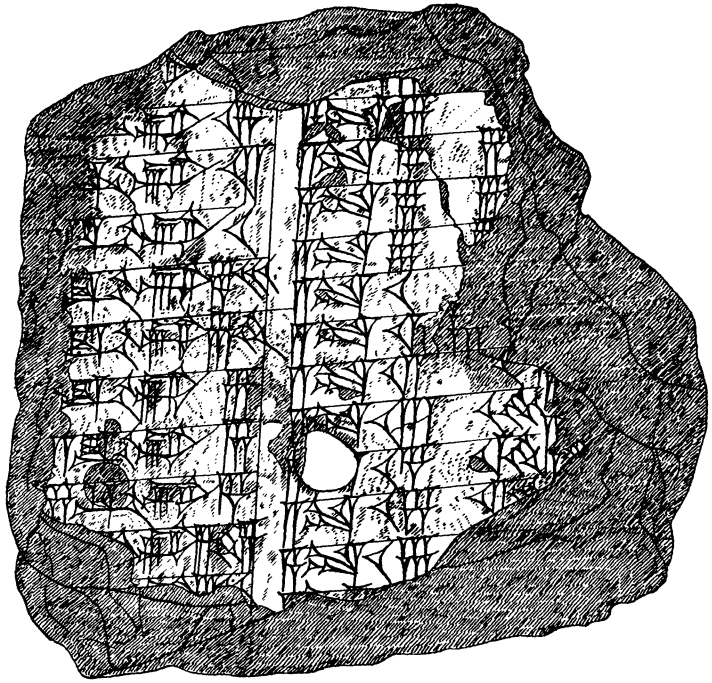
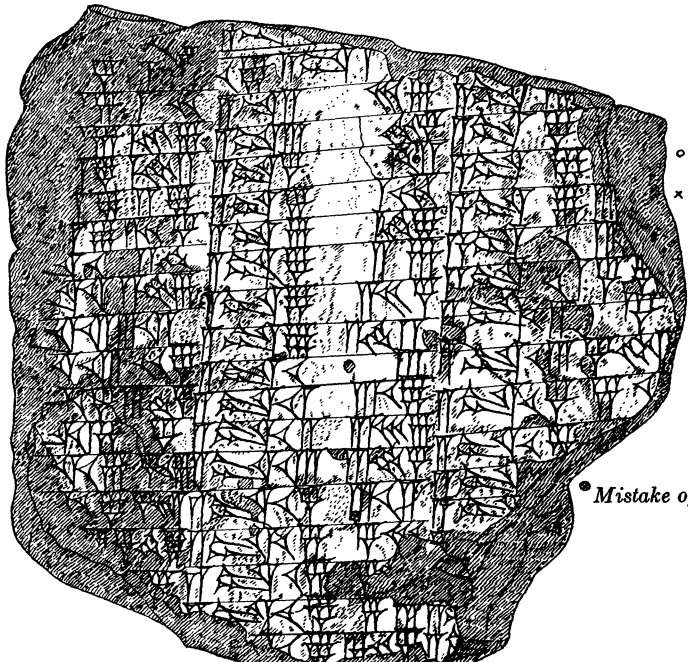
Obverse.

Col. I. *Col. II.* *Col. III.*



Reverse.

Col. IV. *Col. III.* *Col. II.*



° written upon erasure.

× written upon erasure.

• Mistake of scribe for

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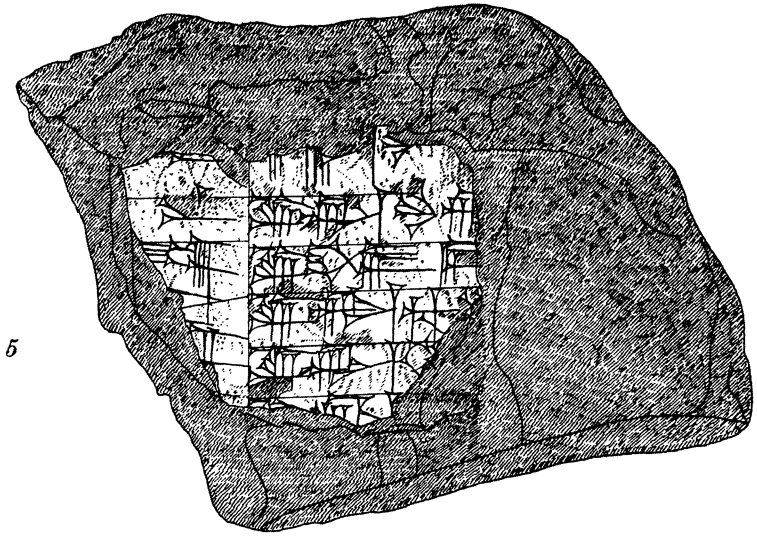
Obverse.

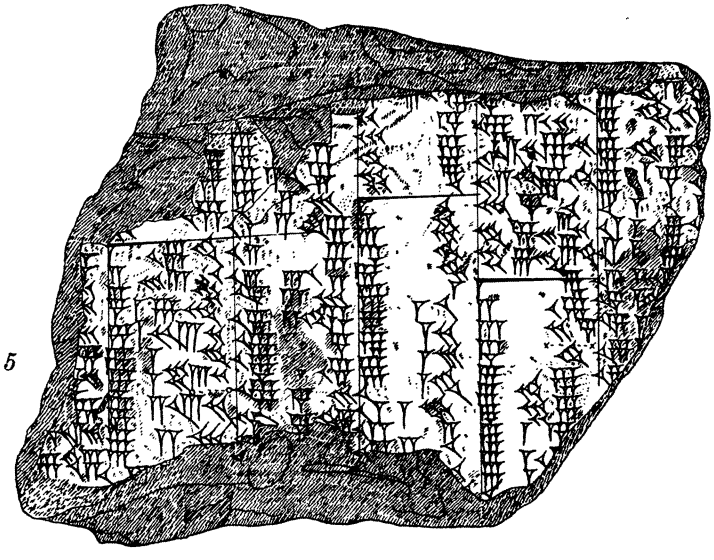
Col. I. *Col. II.*



5 5

Reverse.

Col. I. *Col. II.* *Col. III.* *Col. IV.* *Col. V.* *Col. VI.*



5 5 10 15

°--° *Col. II, 10: Mistake of scribe for* 𒁹𒌋𒁹𒌋.

° *Col. V, 3: Read* 𒁹𒁹𒁹

×--× *Col. V, 11: Scribe omitted* 𒁹𒁹𒁹𒁹𒁹𒁹, *the result of* 480 × 4.

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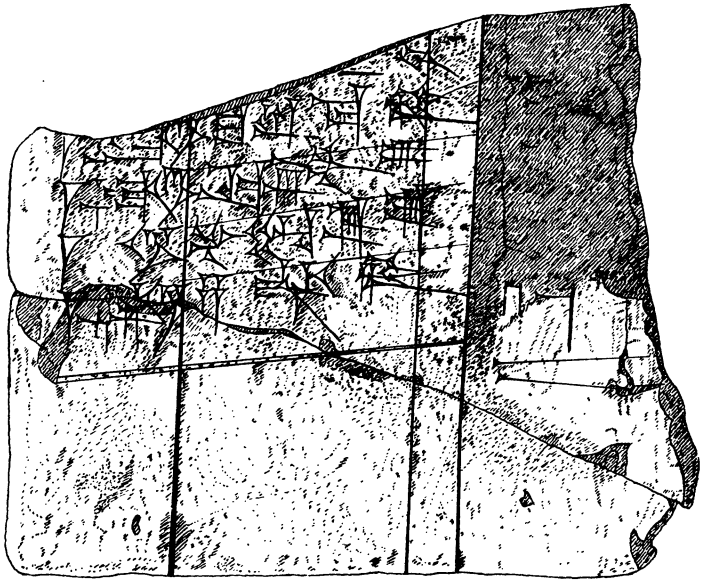
24

Obverse.

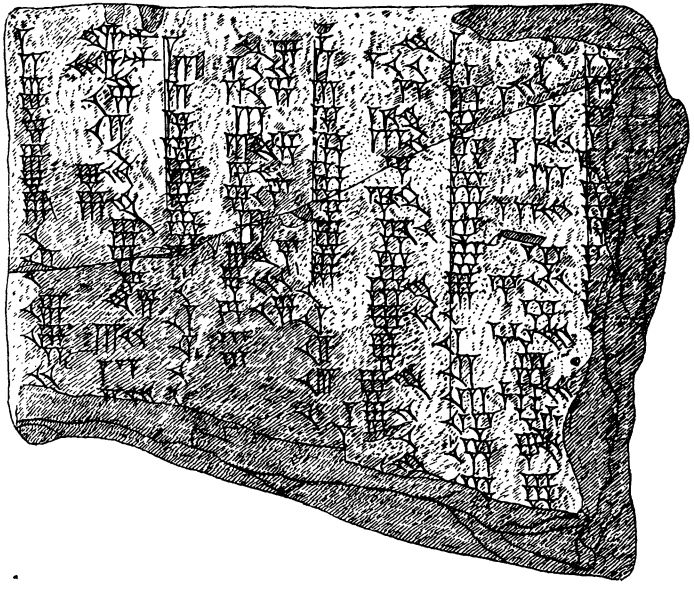
Col. I. Col. II. Col. III.



5

Reverse.

Col. VI. Col. V. Col. IV. Col. III. Col. II.

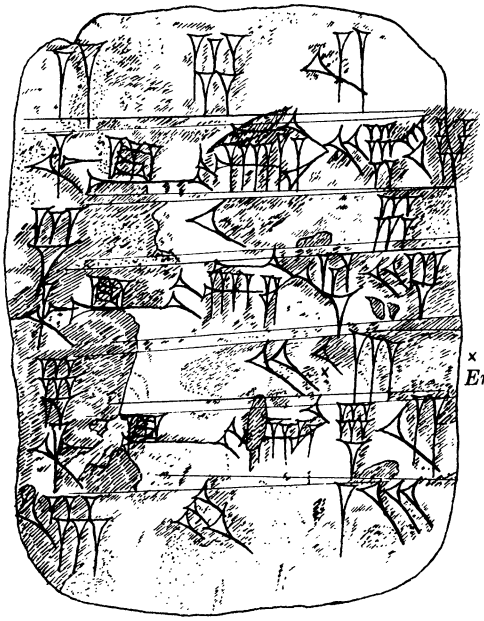


5 10 15

5 10

Hosted by Google

Obverse.

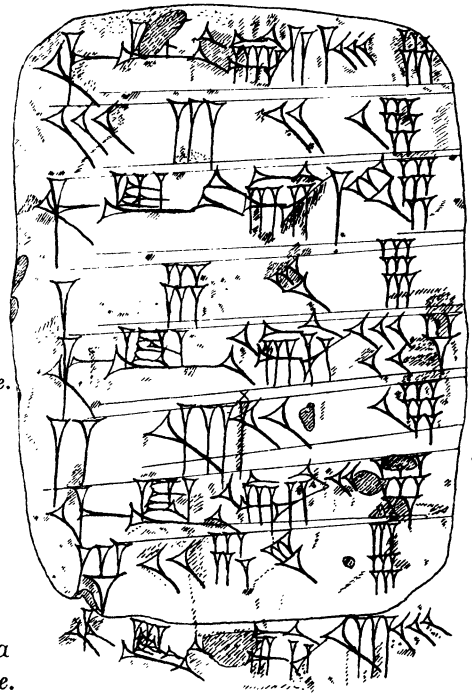


5

10

× Erasure.

Reverse.



× Erasure.

° Erasure of ▽, read ▽▽.

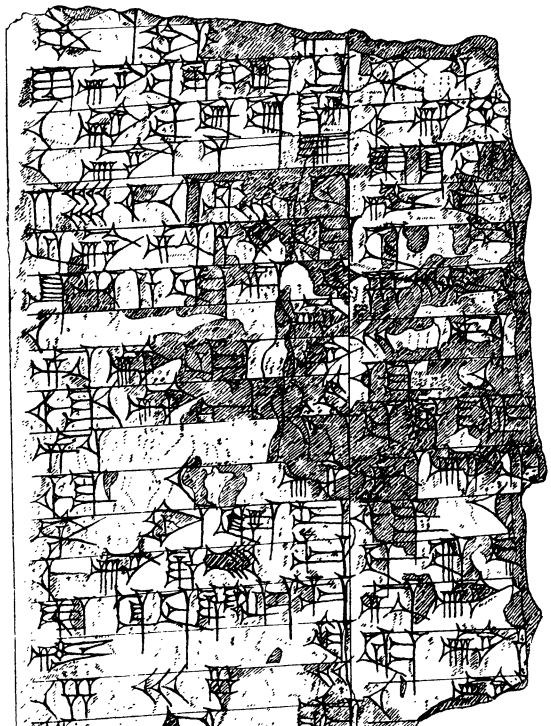
15

U. E.

25ᵃ
Obverse.

Col. I.

Col. II.



15 f. e.

15 f. e.

10 f. e.

10 f. e.

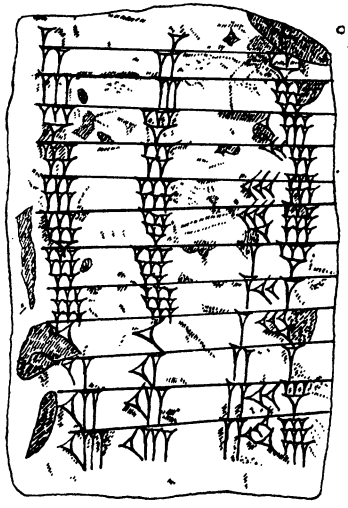
5 f. e.

5 f. e.

Hosted by Google

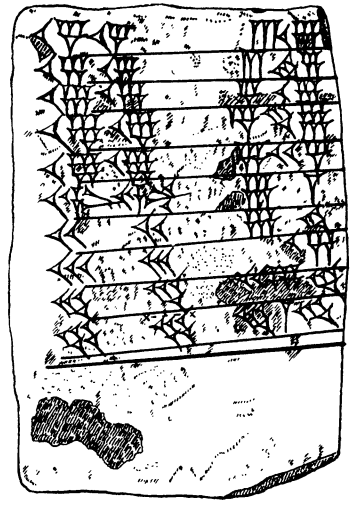
26

Obverse.



°*Fr. b:* Y

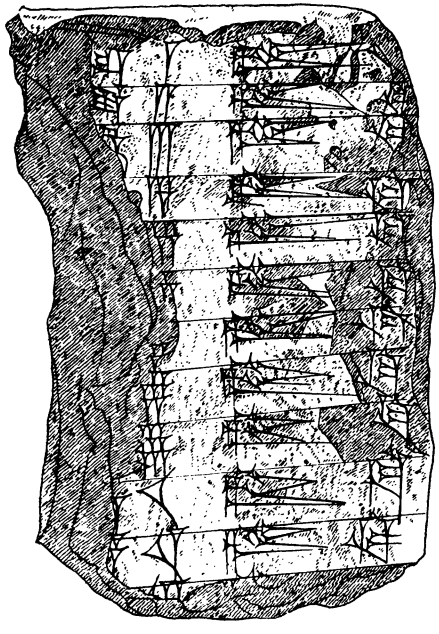
Reverse.



x---x *Omitted on Fr. b.*

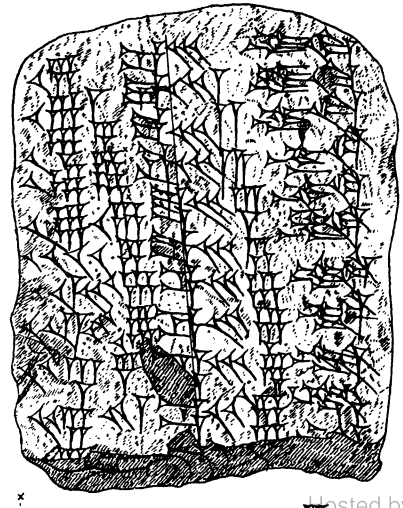
27

Reverse.



28

Obverse.



x---x *Li. 4: Mistake of scribe for*

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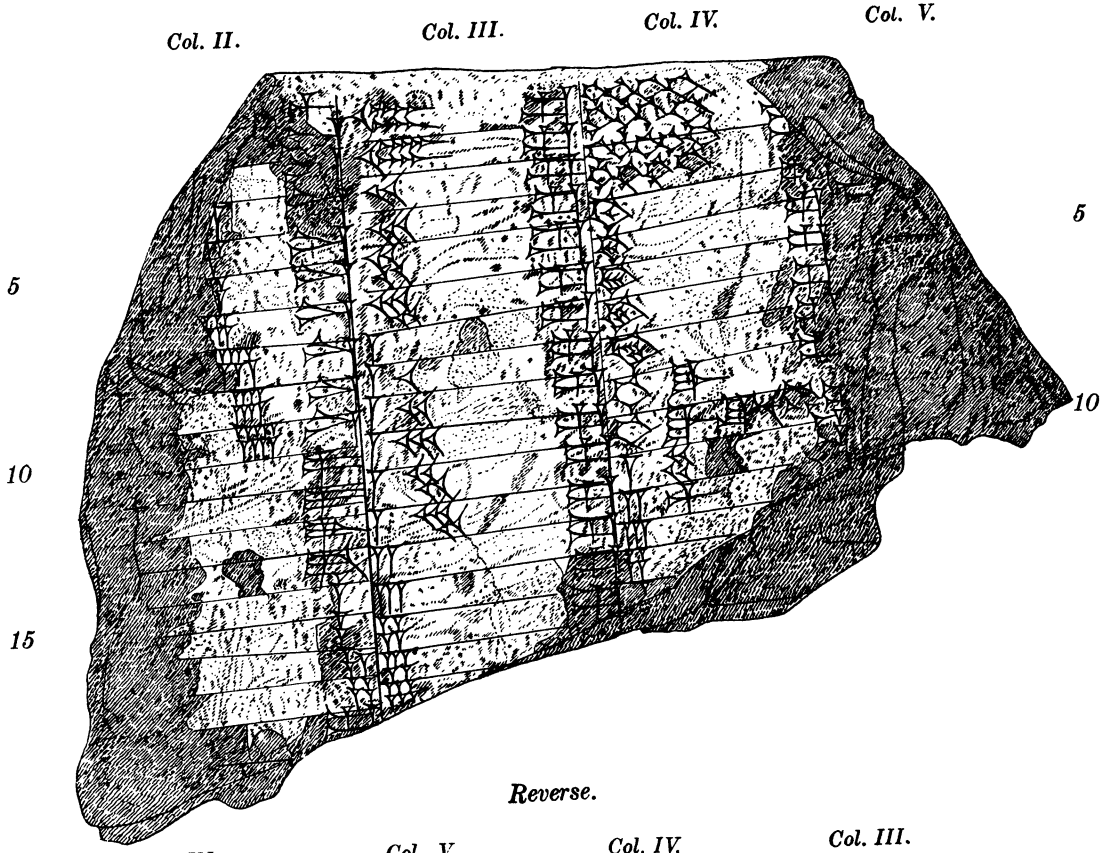
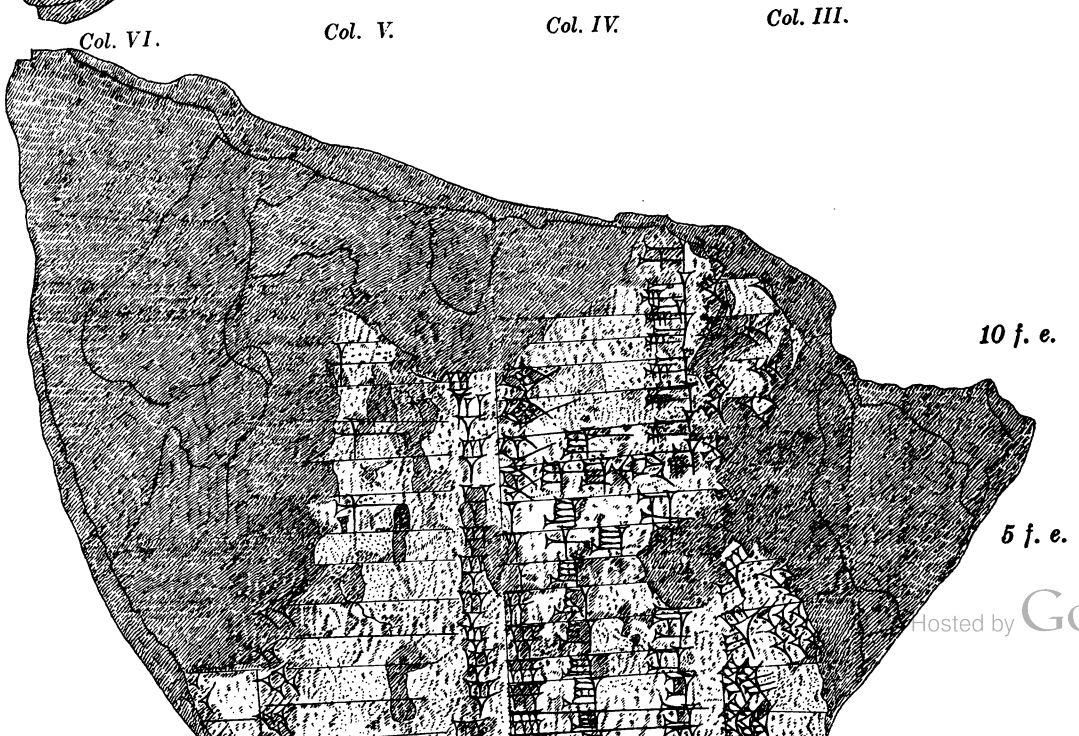
29 *Obverse.*



Reverse.



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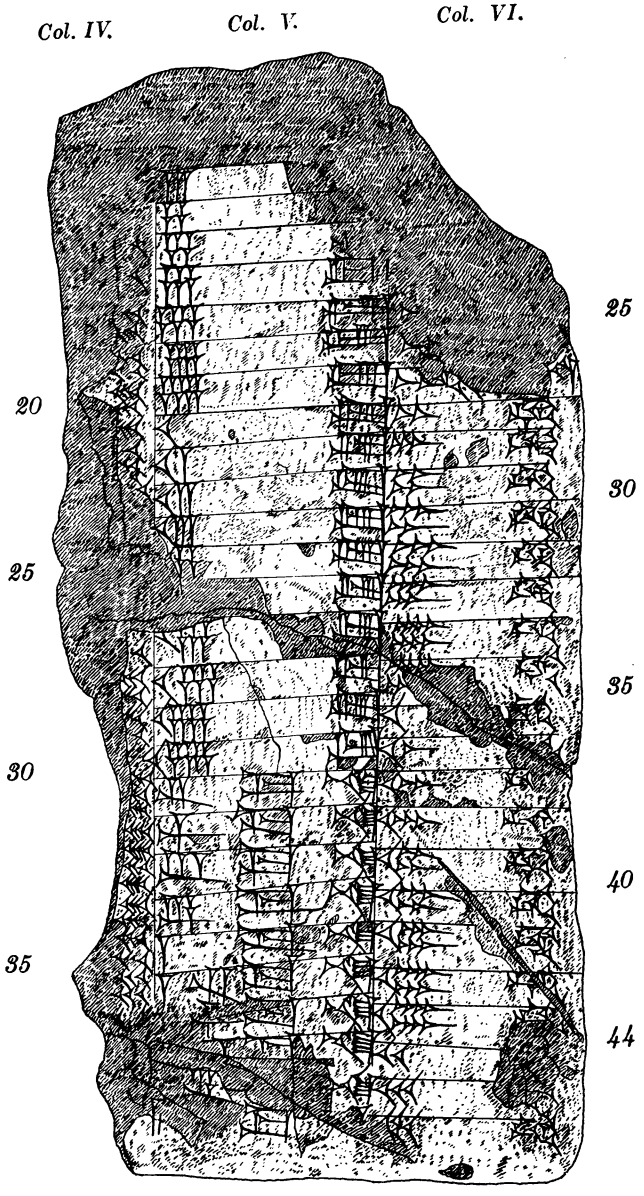
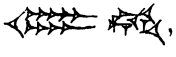
29 **Obverse.**

Continued



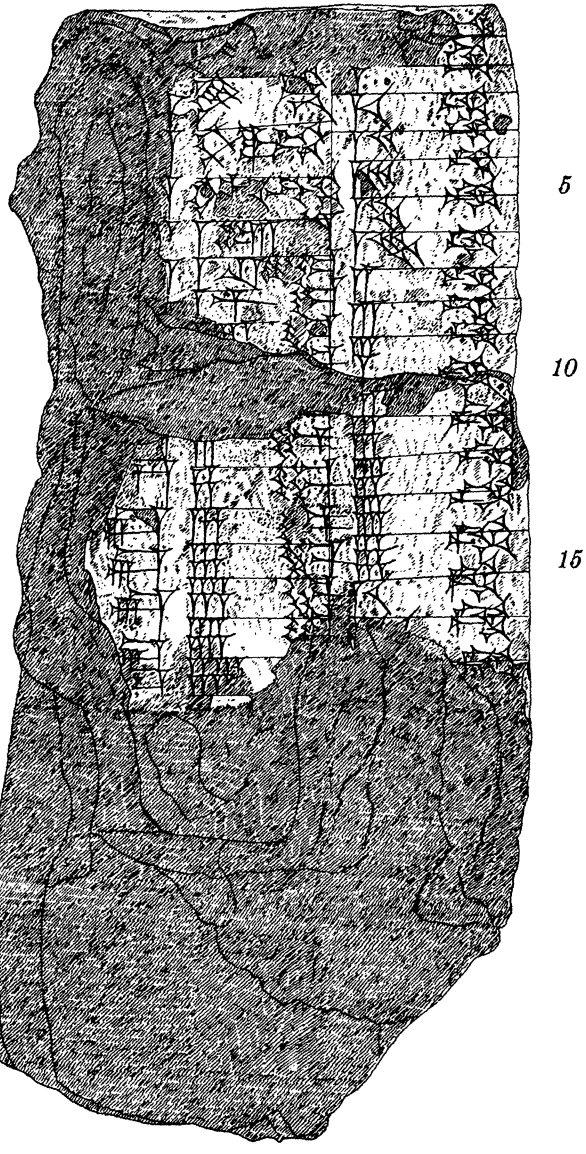
Col. VI, 45,  , *erroneously omitted by scribe.*

Hosted by Google

29 *Reverse.*

Continued

Col. III. *Col. II.* *Col. I.*



5

10

15

Col. I, 16, 17: Perpendicular wedge mistake of scribe.

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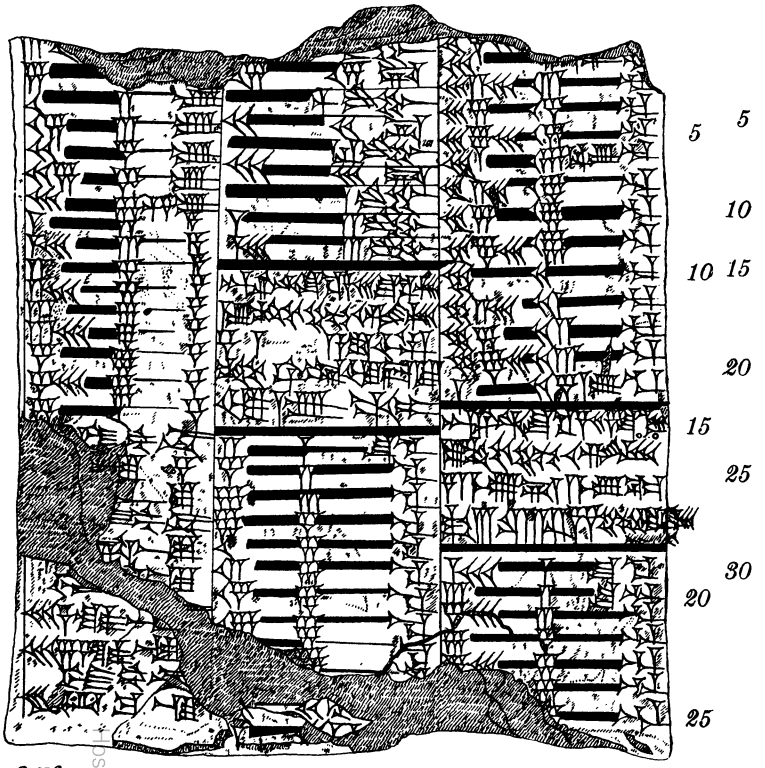
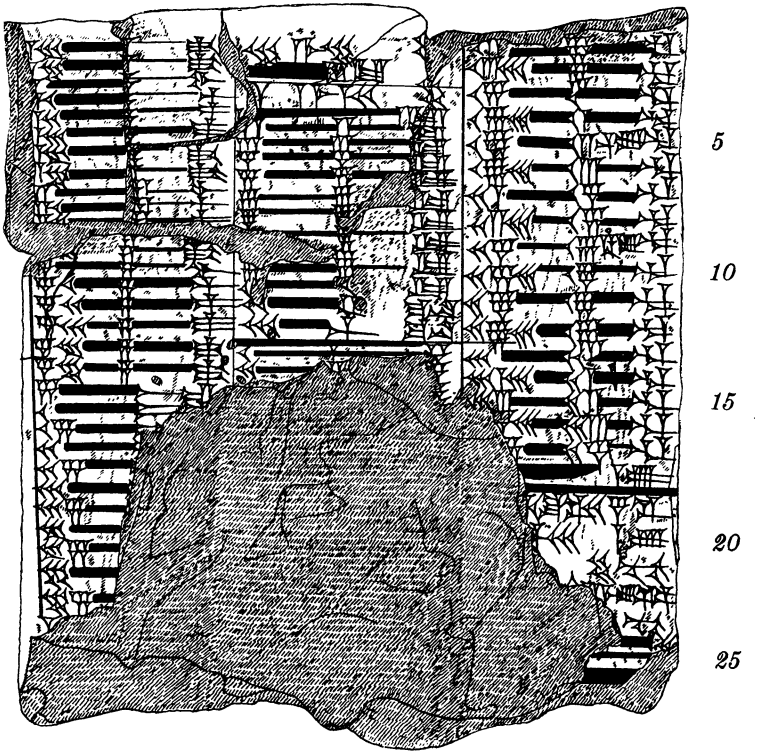
Obverse.

Col. I. *Col. II.* *Col. III.*



Reverse.

Col. VI. *Col. V.* *Col. IV.*



°---° *Col. III, 15 : Ligature for* 𒀀𒀀𒀀 .

° *Col. IV, 9 : Mistake for* 𒁹𒁹 . ×---× *Col. IV, 16 : Mistake for* 𒁹𒁹𒁹 .

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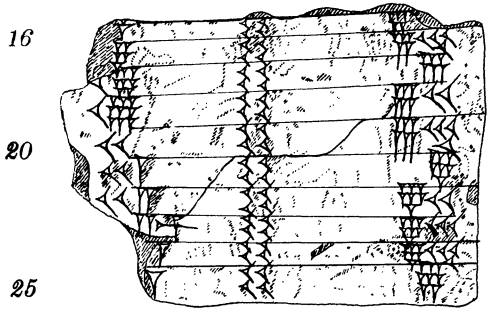
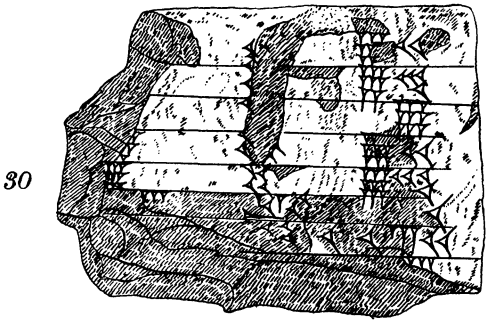
31

Obverse.

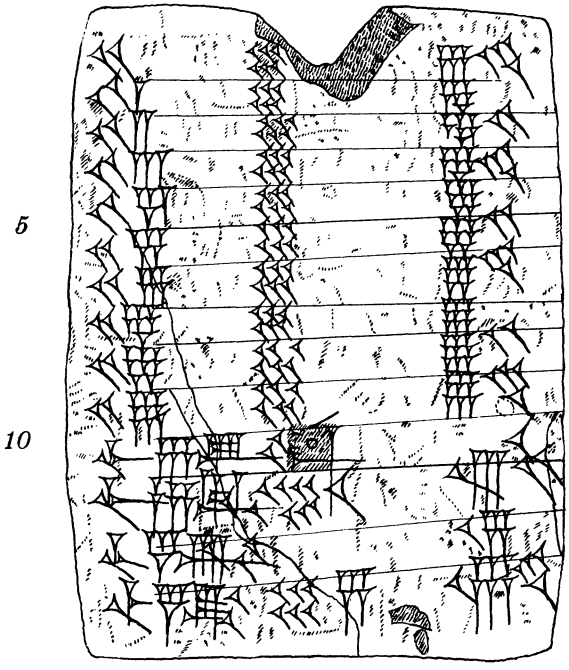


Reverse.

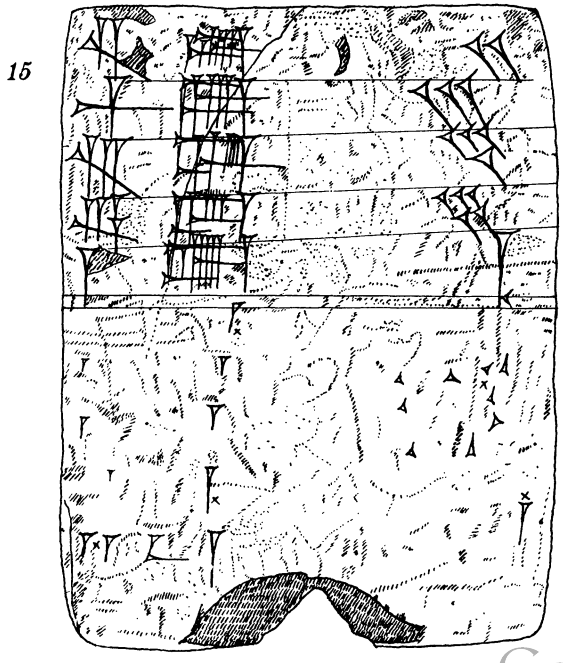


32

Obverse.



Reverse.



° *Erasure of scribe.*

× *Insufficiently erased by the scribe.*

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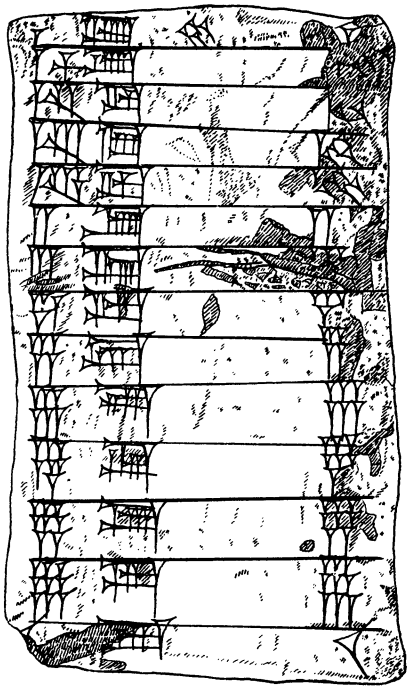
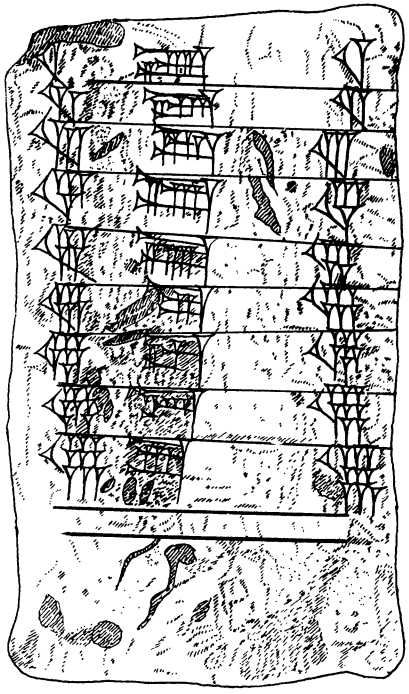
33

Obverse.

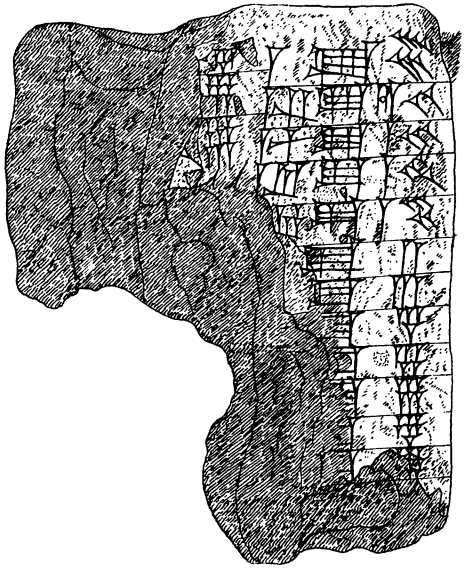


Reverse.



34 Reverse.

Col. II. Col. I.



35 Reverse.

Col. II. Col. I.

° Col. I, 2 : Erasure, read

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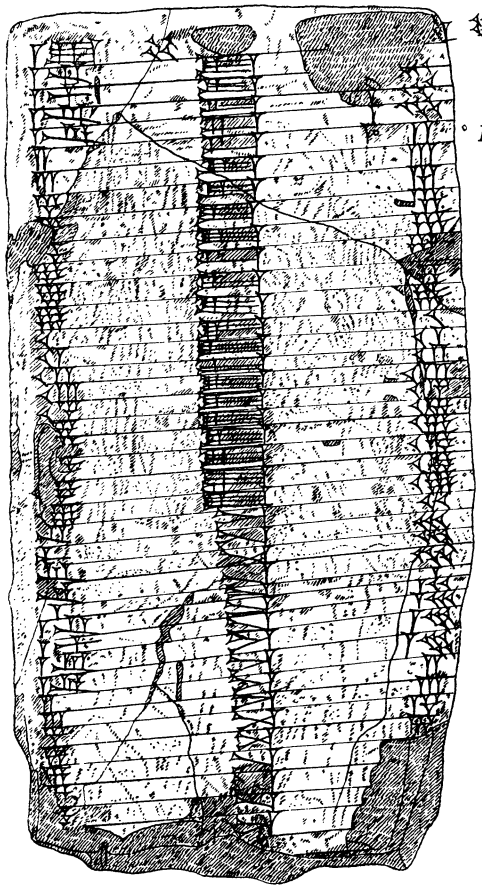
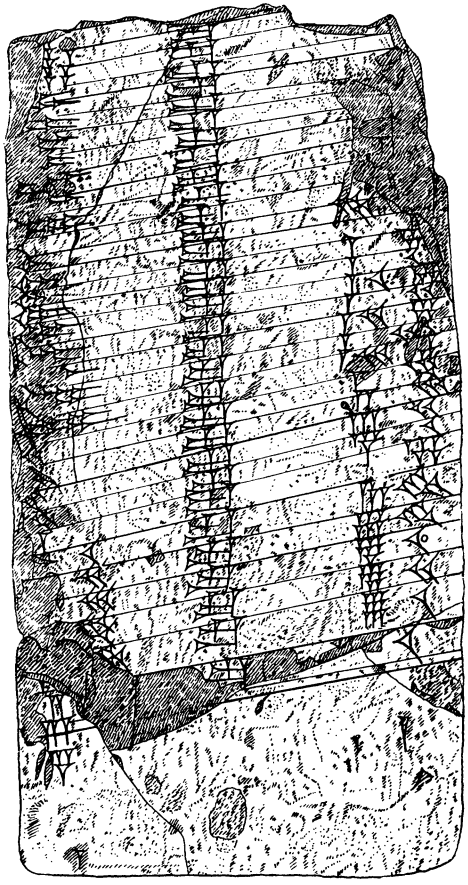
Obverse.

R. E.



° *Erasure of scribe.*

Reverse.



° *Mistake of scribe, read*

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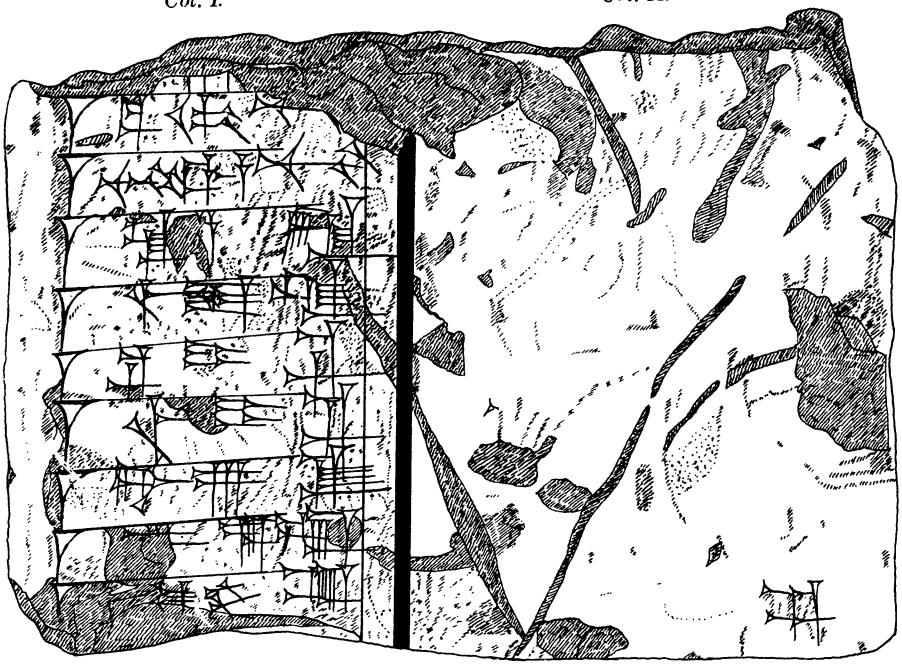
37

Obverse.

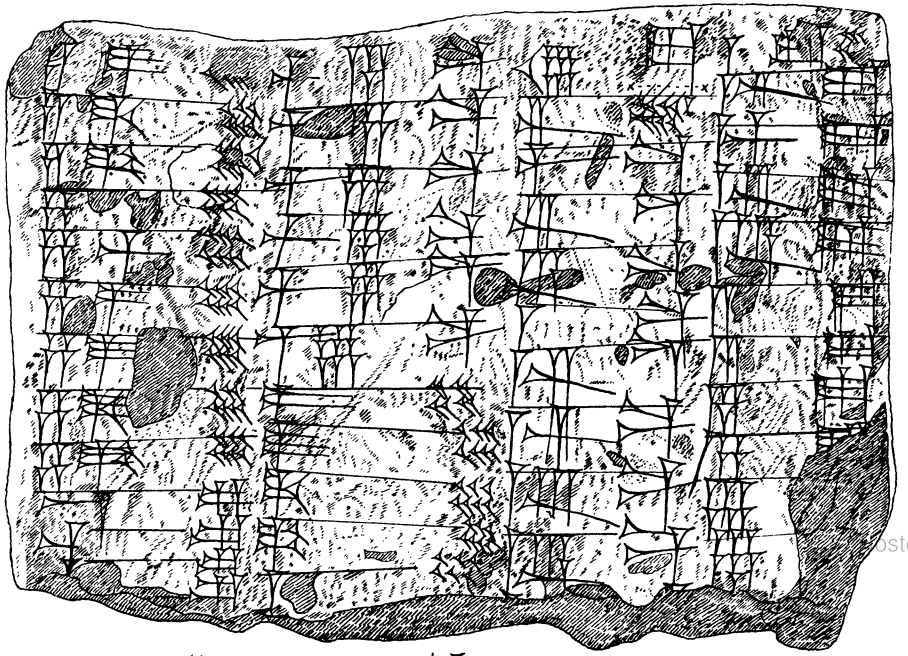
Col. I. Col. II.



5

Reverse.

Col. IV. Col. III. Col. II. Col. I.



5 5

10 10

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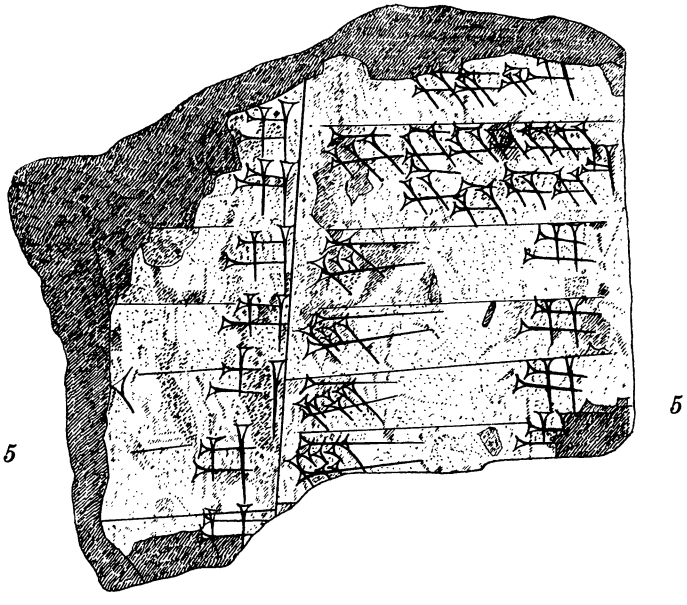
38

Obverse.

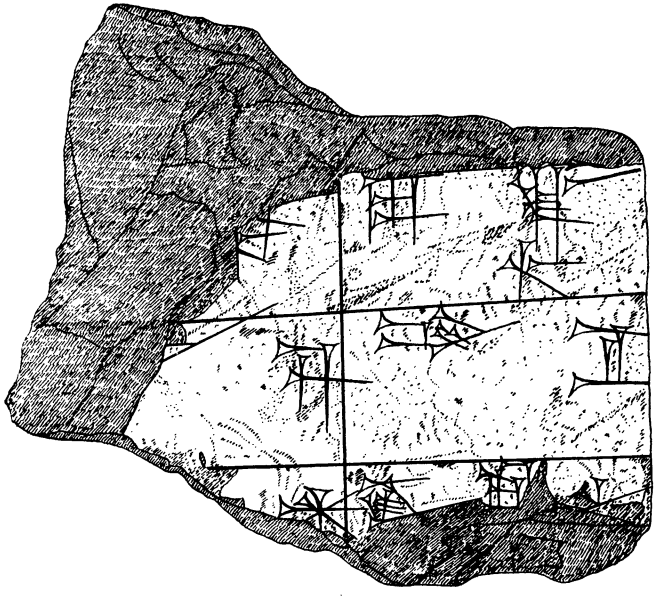
Col. III. *Col. IV.*



5 5

Reverse.

Col. II. *Col. I.*



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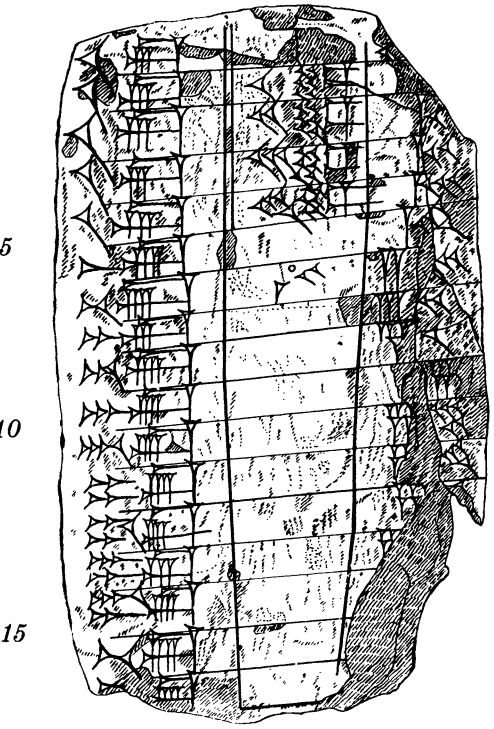
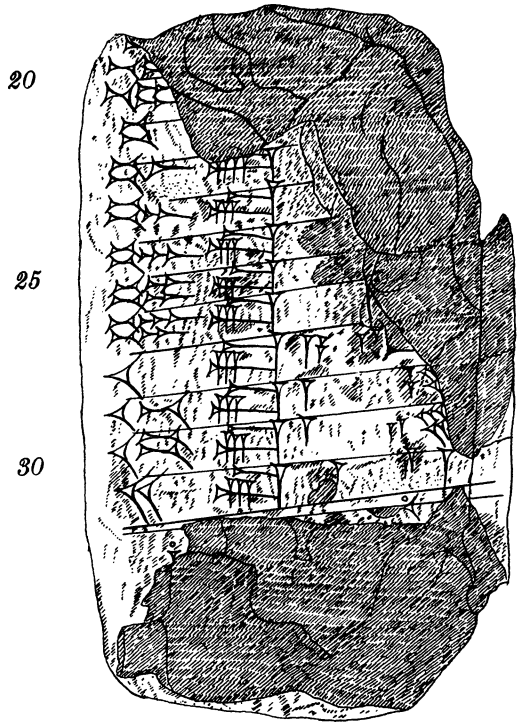
39

Obverse.

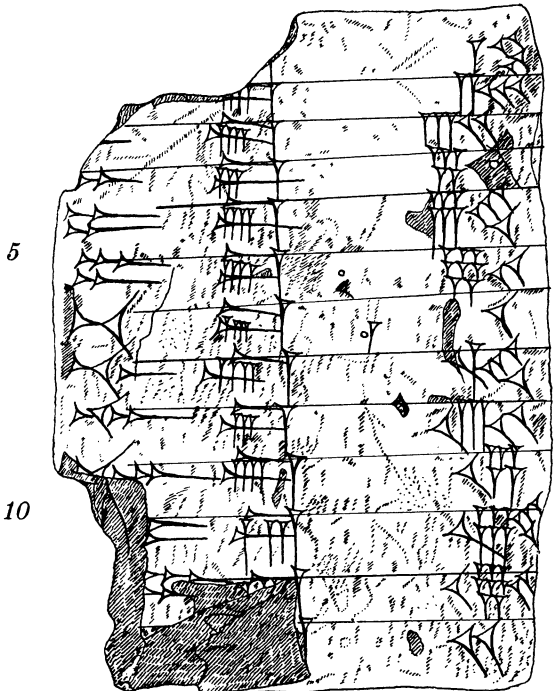


Reverse.

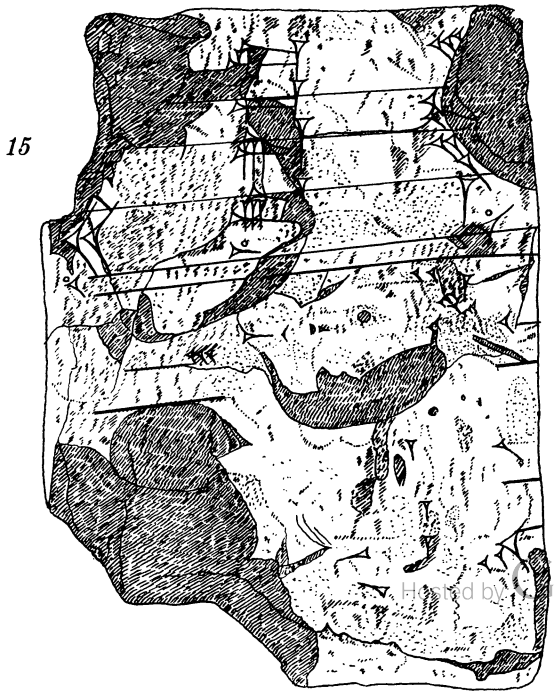


40

Obverse.



Reverse.



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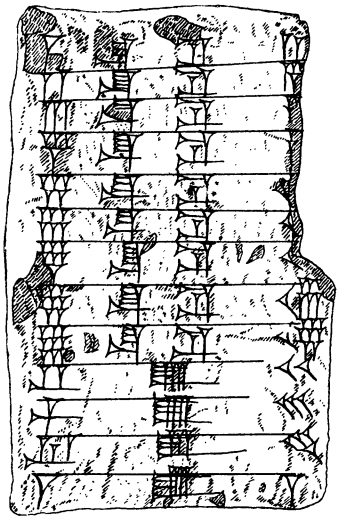
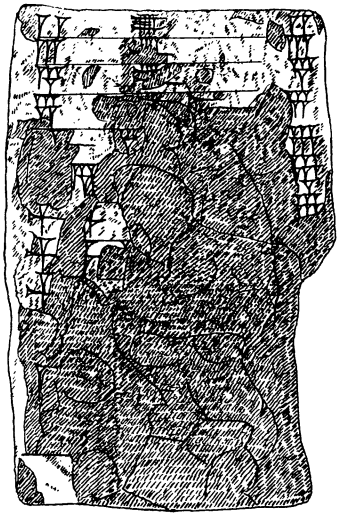
41

Obverse.



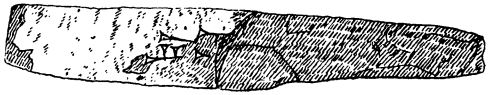
Reverse.



U. E.

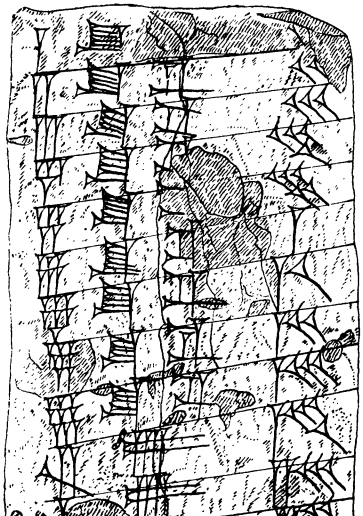
L. E.

R. E.

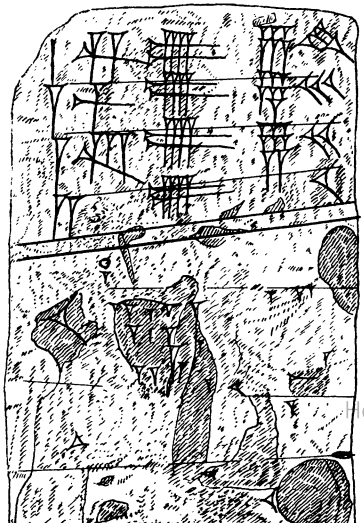


42

Obverse.



Reverse.



This and other small wedges erasures of scribe.

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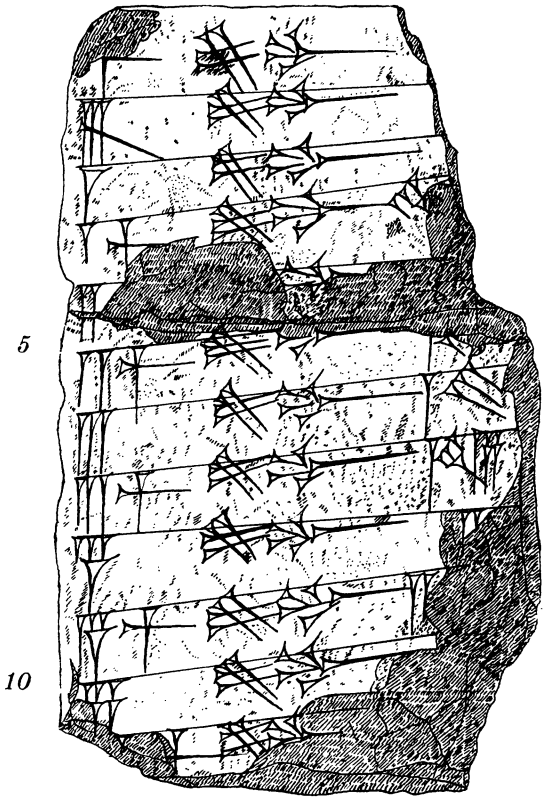
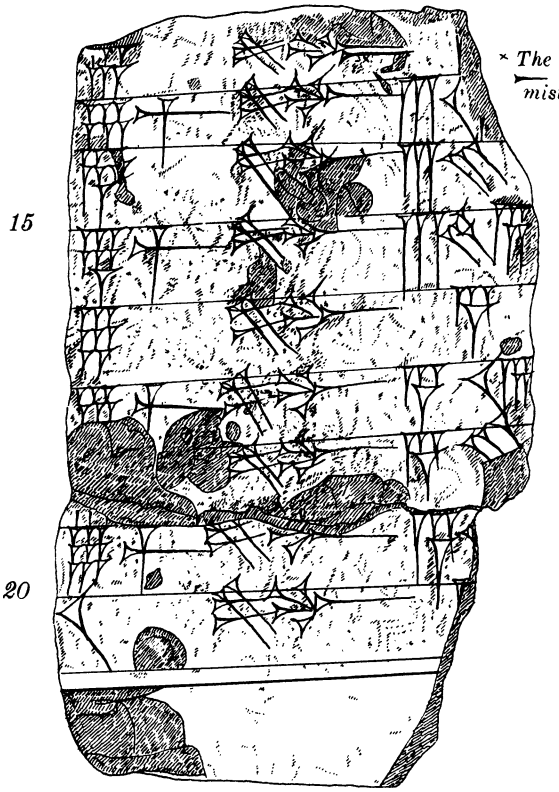
43

Obverse.



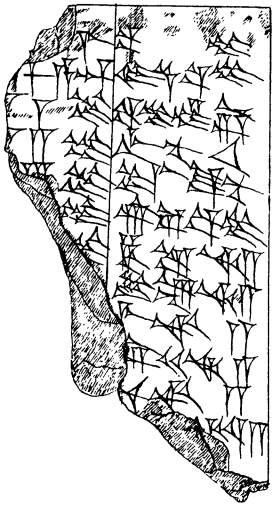
Reverse.



× *The second wedge* ⊢ *mistake of scribe.*

44

Obverse.



Reverse.

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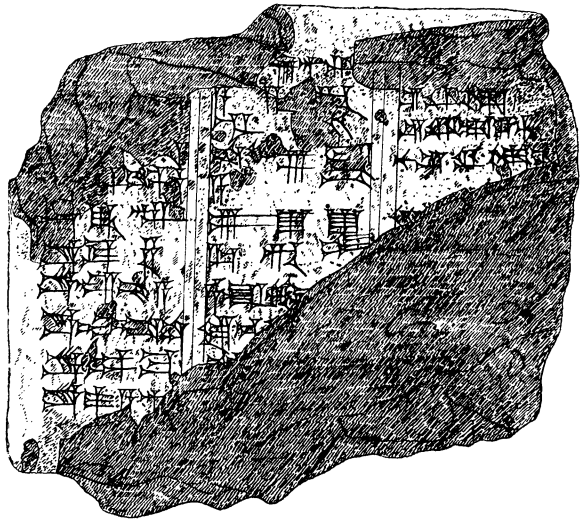
45

Obverse.

Col. I. *Col. II.* *Col. III.*

5

10



Reverse.

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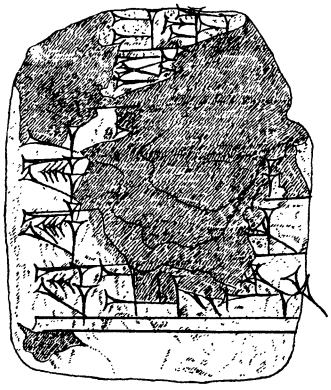
46

Obverse.

Reverse.



5

10

Lo. E.

L. E.

47

Reverse.

5

10

15

20

25

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1

2

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SCHOOL AND LIBRARY OF THE BEL TEMPLE, EAST SECTION

OBVERSE

REVERSE

3

OBVERSE

REVERSE

4

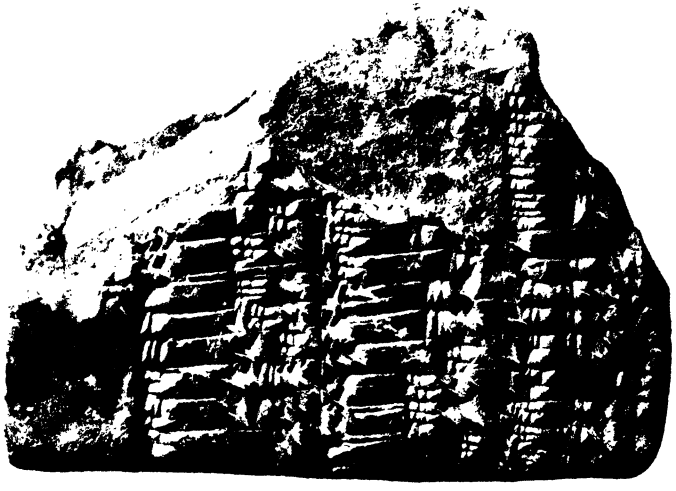
OBVERSE

REVERSE

5

Digitized by Google

6 OBVERSE



6 REVERSE

Hosted by Google

MULTIPLICATION TABLE

7 OBVERSE

Hosted by Google

MULTIPLICATION TABLE

7 REVERSE

Hosted by Google

DIVISION AND MULTIPLICATION TABLE

8 OBVERSE

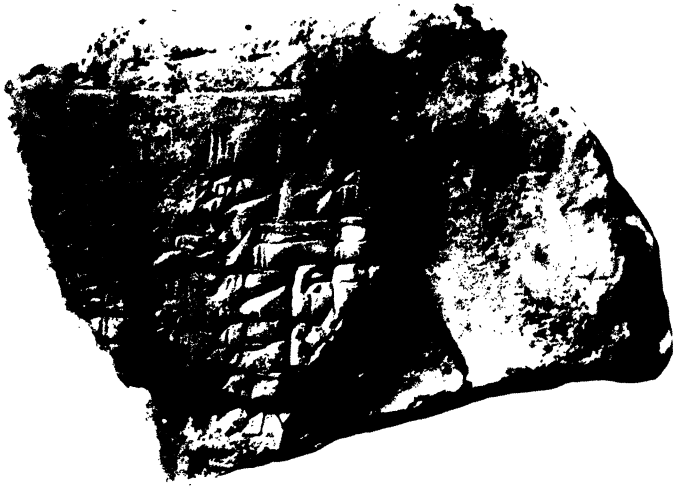
Hosted by Google

LINGUISTIC—MATHEMATICAL TABLET

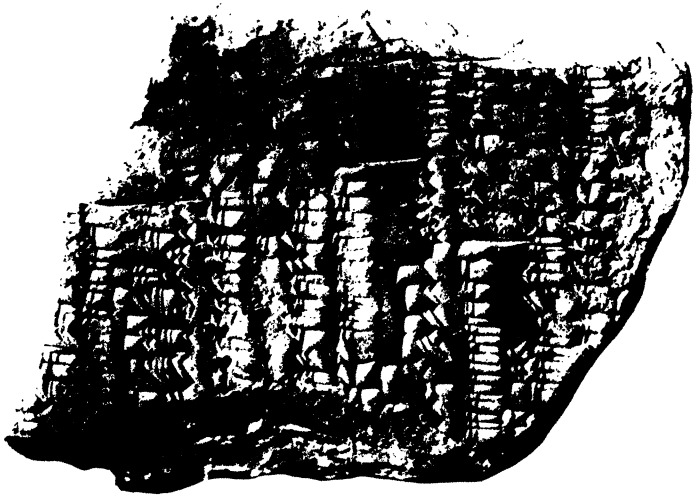
8 REVERSE

Hosted by Google

MULTIPLICATION TABLE



9 OBVERSE



9 REVERSE

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LINGUISTIC—MATHEMATICAL TABLET

10 OBVERSE

10 REVERSE

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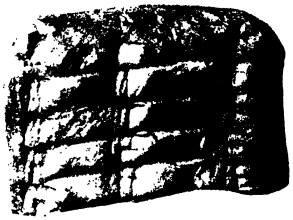
MATHEMATICAL TABLET



11 OBVERSE

11 REVERSE

12 OBVERSE

13 OBVERSE

14 OBVERSE

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15 OBVERSE (REDUCED)

Hosted by Google

METROLOGICAL TABLE

15 REVERSE (REDUCED)

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METROLOGICAL TABLE

16 OBVERSE

Hosted by Google

16 REVERSE

Hosted by Google

METROLOGICAL TABLE

17 OBVERSE

17 REVERSE

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VOLUME XX, PART 1

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